THE AMERICAN
JOURNAL OF PHARMACY

DECEMBER, 1896.

AMERICAN PHARMACOPŒIAS AND DISPENSATORIES.[1]

By John Uri Lloyd.

The following list, with brief descriptions, embraces the record of American Pharmacopœias and Dispensatories to 1890, so far as the writer can determine. The original intention was to complete the subject by incorporating therewith a list of American Materia Medicas, Formularies, works on pharmacy and allied sciences, such as medical botany and medical materia medica. However, it became evident that these in themselves were more than enough for a journal contribution, and hence they were left for another occasion. In some instances difficulty was experienced in properly classifying the publications, since titles do not always serve as a proper means of classification. For this reason some publications reserved for other sections might, perhaps, more justly be included in the list herewith presented.

The record is made up from the contents of the Lloyd Library, but the list has been compared with such catalogues as that of the Surgeon General's Library, which is not as complete as our own in works of this description, and it is not likely that many prominent oversights have been made. Any information concerning omissions will be thankfully received. It should be added that homœopathic works are not herein included, for the reason that the library is not as yet complete enough in this direction to do justice to such publications.

[1] Read at the November Meeting of the Cincinnati Section of the American Chemical Society.

AMERICAN PHARMACOPŒIAS.[1]

1778.—The first American Pharmacopœia was issued in 1778. It was titled "Pharmacopœia Simpliciorum et Efficaciorum," etc., and was published for the United States Hospital, Lititz, Lancaster County, Pa. The work is in Latin, contains thirty-two pages, the text occupying 4½ x 2½ inches. It is in two sections, the first section being devoted to "Medicamenta Interna;" the second section, to "Medicamenta Externa seu Chirurgica." A second edition was issued in 1781, this being presented by Mr. Chas. A. Heinitsch to the Philadelphia College of Pharmacy.

In this (second) edition the name W. Brown, M.D., author, is found on the title-page, but it is absent from the first edition. A reprint of this work appeared in the Am. Jour. Pharm., September, 1884.

1808.—The second book issued in America under the name "Pharmacopœia," was by the Massachusetts Medical Society, in 1808. This was "prepared conformably to a vote of the Counsellors, passed on the third day of October, 1805." This volume is beautifully printed (Boston, 272 pages), contains both an English and a Latin index, posological and prosodial table of ancient names, with their synonyms, and a table of systematic names and their synonyms. This book cannot but excite admiration, and the reviewer regrets that space will not permit him to dwell at length upon some phases of its contents.

1820.—The first issue of the Pharmacopœia of the United States appeared in 1820 from the press of Wells & Lilly, Boston. It contained 272 pages, and was printed in both English and Latin. A second edition was issued in 1828. All subsequent revisions were in English only.

Owing to internal dissensions, two Pharmacopœias were issued in 1830, one (176 pages) from New York, the other (268 pages) from Philadelphia. Subsequent revisions were as follows:

[1] Hospital Formularies (excepting 1778) are omitted.

Convention of 2d Revision, 1840 (279 pages), was issued from Philadelphia.
" " 3d " 1850 (317 pages), was issued from Philadelphia.[1]
" " 4th " 1860 (399 pages), was issued from Philadelphia.
" " 5th " 1870 (383 pages), was issued from Philadelphia.
" " 6th " 1880 (488 pages), was issued from New York.
" " 7th " 1890 (602 pages), was issued from Philadelphia.

1822.—Dr. Jacob Bigelow issued "A treatise containing 422 pages, intended as a sequel to the Pharmacopœia of the United States." This book is somewhat of the nature of a Dispensatory confined to Pharmacopœial drugs.

1880.—Dr. Chas. Rice presented a Report (199 pages) on the Revision of the United States Pharmacopœia; this work was titled "General Principles, Titles and Working Formulæ Prepared for the Next Pharmacopœia."

1881.—"An Unofficial Pharmacopœia," etc. By Prof. Oscar Oldberg. This work of 503 pages is largely devoted to the Metric System; Part I, 59 pages, being "The Metric System;" and Part III, 134 pages, being titled "Metric Prescription Formulary." The tables and rules for conversion of metric weights and measures into other systems are very complete. Possibly, I should have placed this work among the Formularies.

1889.—The Pharmacopœial Committee issued a "Digest of Criticisms of the Sixth Decennial Revision," Part I containing 189 pages, Part II containing 86 pages. Part III dated 1890 containing 335 pages.

1892.—The Pharmacopœial Committee issued a pamphlet (40 pages) on "Reagents and Volumetric Solutions Proposed for the U. S. Pharmacopœia."

AMERICAN DISPENSATORIES.

1806.—The first American Dispensatory was issued by Dr. John Redman Coxe, of Philadelphia, in 1806. It was titled "The American Dispensatory." There were nine editions, the last appearing in 1831. Its text and contents are clear and concise.

1810.—The second American Dispensatory was issued by Dr. James Thacher, of Plymouth, Mass., in 1810, under the auspices of

[1] In 1855 a second edition of 1850 Pharmacopœia was issued, the first edition having been exhausted. This, as stated in the preface, was "printed in a smaller and less expensive form," but the committee did not "consider themselves authorized to make additions or considerable changes." The writer considers himself fortunate in possessing the interleaved autograph copy of Prof. Wm. Procter, freely interspersed with his personal criticisms, donated by his son, Wallace Procter.

the Massachusetts Medical Society. Its basis was the newly issued Pharmacopœia of the same society (which, as already said, was the first American Pharmacopœia, 1808), and was dedicated to John Warren, one of the committee on revision of that work. This Dispensatory was issued from Boston, and titled "The American New Dispensatory," etc. It contained 529 pages, the contents reminding one forcibly of the Dispensatories of to-day. It was revised and enlarged four times, the fourth edition appearing in 1821.

1827.—"The Eclectic and General Dispensatory." appeared in Philadelphia from an anonymous author, the title-page simply carrying the information that it is "by an American physician." The book contains 624 pages and a supplement of lithographic plates and apparatus. This book had no connection in any way with modern eclecticism.

1833.—The first edition of the "Dispensatory of the United States of America," by Dr. George B. Wood and Dr. Franklin Bache, Philadelphia, appeared in 1833. It contained 1,073 pages, and considered only the official drugs and preparations. In 1834, the second edition (1,162 pages) was issued, to which was added an appendix, in two parts, the first part consisting of "Drugs and Medicines not Officinal," the second being devoted to the "Art of Prescribing Medicines." Following these, new editions preceding 1890 were issued as follows:

3d	edition	1836
4th	"	1839
5th	"	1843
6th	"	1845
7th	"	1847
8th	"	1849
9th	"	1851
10th	"	1854
11th	"	1858
12th	"	1865
13th	"	1875
14th	"	1877
15th	"	1883
16th	"	1889

After the fourteenth edition, the work was continued by Dr. H. C. Wood, Prof. Joseph P. Remington and Prof. S. P. Sadtler.

1848.—"A Dispensatory and Therapeutical Remembrancer, second edition," by John Mayne (England). Revised by Dr. R. Eglesfeld

Griffith, Philadelphia, with the addition of "Formulæ of the United States Pharmacopœia." This book, of 329 pages, is wholly devoted to medicinal preparations and the therapy of pharmacopœial drugs.

1852.—The first edition of "The Eclectic Dispensatory," by Dr. John King and Dr. Robert S. Newton, 708 pages, was issued in 1852. An injunction against this book was taken by the proprietors of the "United States Dispensatory," which was finally upheld by the Courts, and, in consequence, Dr. King was compelled to destroy his plates and pay the owners of the "United States Dispensatory" a large amount of money. In all, the expense to King was over $6,000. The next edition (1854) appeared under the name of "The American Eclectic Dispensatory," by Dr. John King, which title was subsequently changed to "The American Dispensatory." In 1880 a supplement of 202 pages was added, by Dr. John King and J. U. Lloyd. In all, sixteen editions of this Dispensatory have appeared, there having been three revisions.

1869.—"The Physio-Medical Dispensatory," 832 pages, by Dr. Wm. H. Cook, Cincinnati. This work is authority with the followers of Samuel Thomson, and is a very interesting publication. This school of medicine (physio-medical) excludes poisons from its materia medica and has many advocates in the middle West.

1878.—"The Dispensatory and Pharmacopœia of North America and Great Britain," 620 pages, by Dr. John Buchanan and Dr. John T. Siggins, Philadelphia, 1878. This book, so far as the face of the text is concerned, reminds one of the 1880 edition of the United States Pharmacopœia, but the resemblance extends no further than the face of the type. The author, Dr. Buchanan, of Philadelphia, should not be confused with Dr. Jos. R. Buchanan, formerly of Boston, now residing at San José, Cal. No subsequent edition appeared.

1879.—The first edition of "The National Dispensatory," 1,628 pages, by Dr. Alfred Stillé and Prof. John M. Maisch, appeared in 1879, Philadelphia. The contents were arranged alphabetically by sections, the General Index being supported by a Therapeutical Index. The second edition appeared in 1880, the third edition in 1884, the fourth edition in 1889. At the death of Prof. Maisch, the work was revised by Dr. Alfred Stillé, Prof. Chas. Caspari, Jr., and Henry C. C. Maisch, the name of Prof. John M. Maisch remaining on the title-page.

A CONTRIBUTION TO THE KNOWLEDGE OF SOME NORTH AMERICAN CONIFERÆ.

By Edson S. Bastin and Henry Trimble.

(*Continued from page 566.*)

GENERAL CHARACTERS OF THE GENUS TSUGA.

Only about seven species of the genus Tsuga are known, two, or perhaps three, of these belong to Japan, two to western North America and two to eastern North America. The west American species are T. Mertensiana, Carriere; T. Pattoniana, Brewer and Watson; and the east American species are T. Canadensis, Carriere, and T. Caroliniana, Engelmann. All of the species are large trees of graceful habit, and they are closely allied to one another, except T. Pattoniana, which is aberrant in some of its characters, approaching more closely in its structure to the pines and spruces.

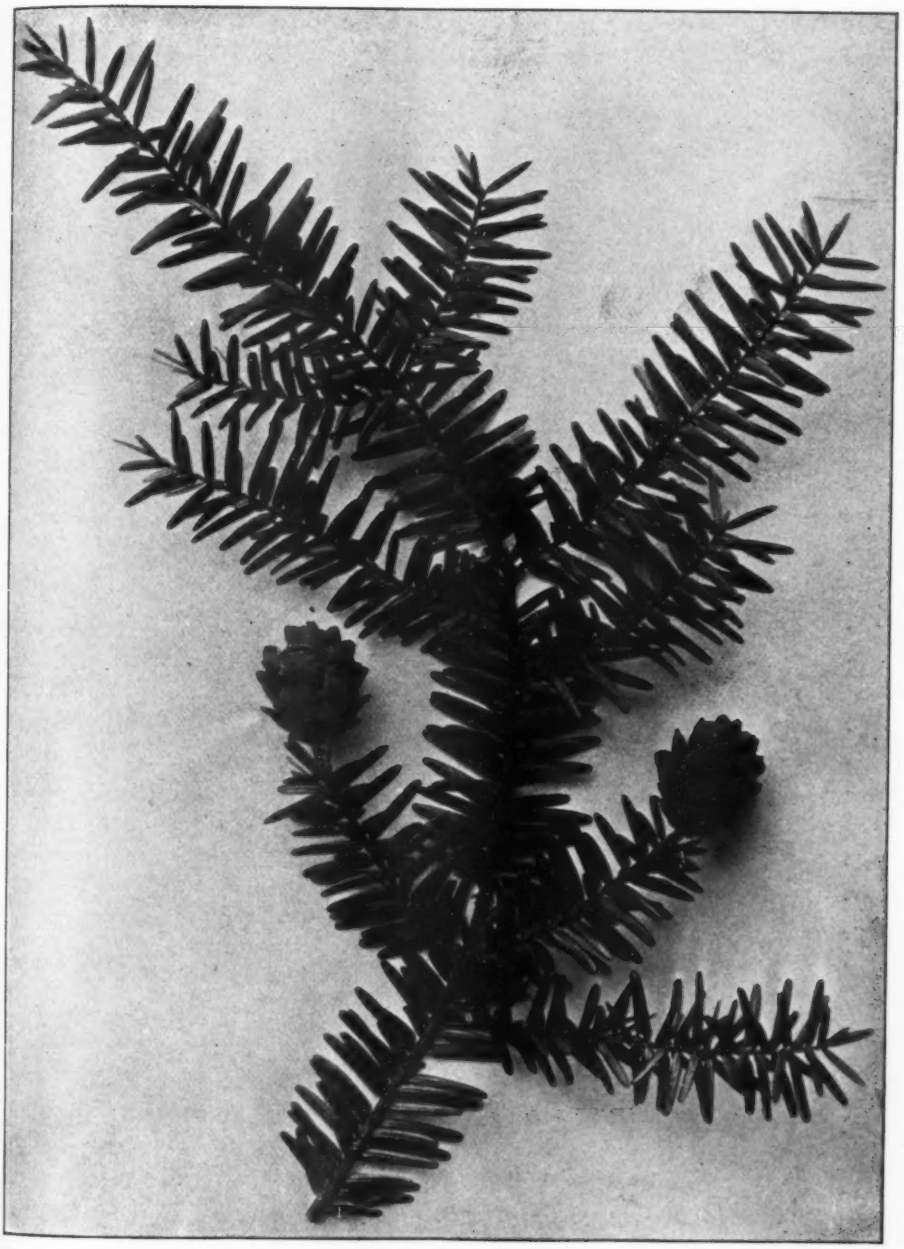
The hemlocks are all evergreen trees, with slender, spreading branches, which are mostly horizontal or drooping; with flat, horizontally spreading, alternate leaves, which, by the direction they take, appear two-ranked or pectinate; they have short, green petioles, which are inserted on slight elevations on the branches. The staminate flowers are sub-globose and axillary; the anthers are two-celled and transversely dehiscent; the pollen-grains are simple. The cones terminate the branchlets of the preceding year; mature their seeds the first year; are pendulous, ovoid or oblong in form; of small size, with thin, scarcely woody scales that are two-seeded, obtuse and persistent. The seeds are provided with wings.

TSUGA CANADENSIS, CARR.

HEMLOCK.

DISTRIBUTION AND GENERAL CHARACTERS.

The common hemlock of eastern North America is very abundant in many localities, sometimes to the exclusion of all other trees. It is also rather widely distributed, ranging northward through Nova Scotia and New Brunswick, and through the regions bordering on the St. Lawrence and the Great Lakes; it occurs in all the Eastern and Middle States, extends westward to the eastern border of Minnesota, and follows the Alleghanies southward through



BRANCH OF TSUGA CANADENSIS.

Maryland, the Virginias, North Carolina and Tennessee to Georgia and Alabama.

It is a tree of large size, attaining a height of 110 feet and a diameter of 4 feet. It is sometimes found in low ground, where the

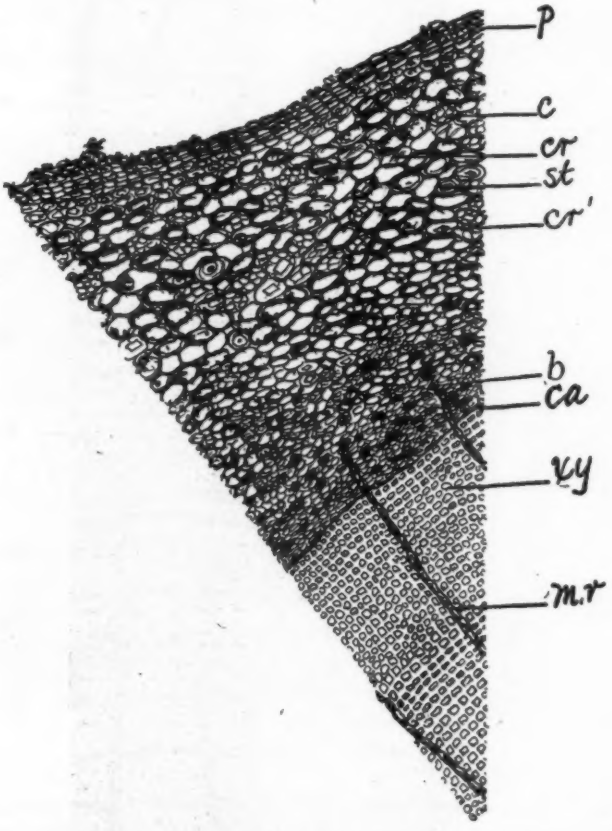


Fig. 52.—Small part of cross-section of twig, two years old, of Tsuga Canadensis, magnified 75 diameters. *P*, periderm; *c*, small parenchyma cells of cortex; *cr*, *cr'*, crystal cells; *st*, stone cells of middle bark; *b*, bast layer; *ca*, cambium; *xy*, xylem; *mr*, medullary ray containing tannin.

soil is deep and rich; but it occurs more commonly on rocky hill- or mountain-sides, especially along northern exposures. Its wood is of low specific gravity, brittle and neither very strong nor very durable, but it is much used for lumber. The tree is beautiful in

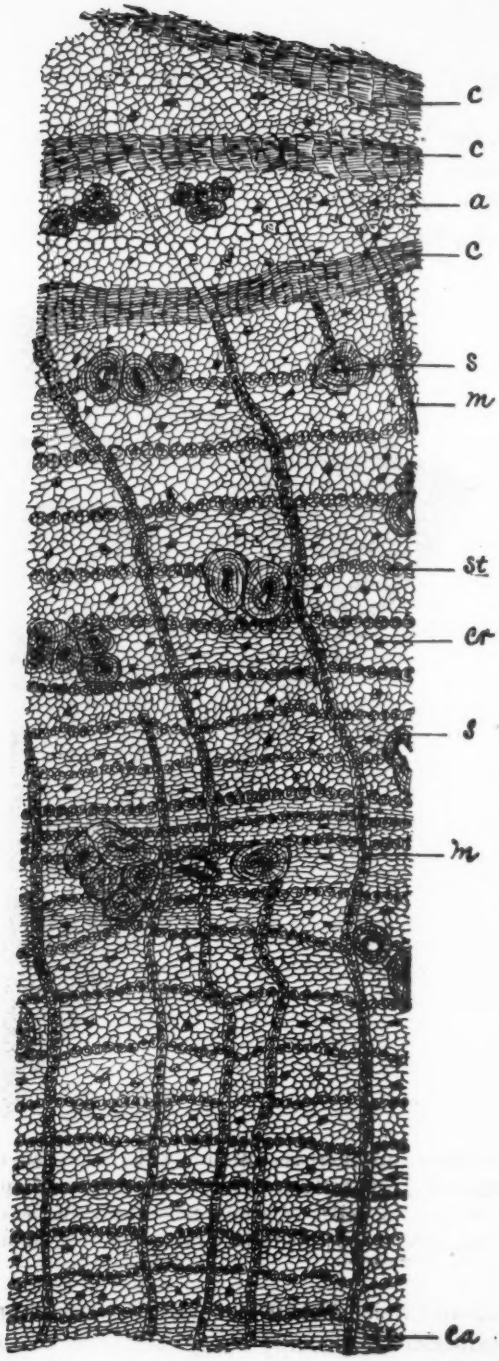


Fig. 53.—Small portion of cross-section of bark of Tsuga Canadensis, magnified about 50 diameters. *c*, *c*, *c*, secondary cork formation; *a*, dead phloem tissues rich in coloring, resin and tannic matters; *s*, *s*, stone cells; *m*, *m*, medullary rays; *cr*, crystal cell; *ca*, cambium; *st*, bands of starch-bearing parenchyma cells.

form and in its light, delicate spray, and is therefore much cultivated for ornament.

MICROSCOPICAL STRUCTURE.

The cross-section of a twig of two years' growth, *Fig. 52*, showed at the outside an epidermis already mostly displaced by periderm formations. Beneath the periderm layer was a cortex composed of parenchyma cells of small or moderate size, thickly interspersed

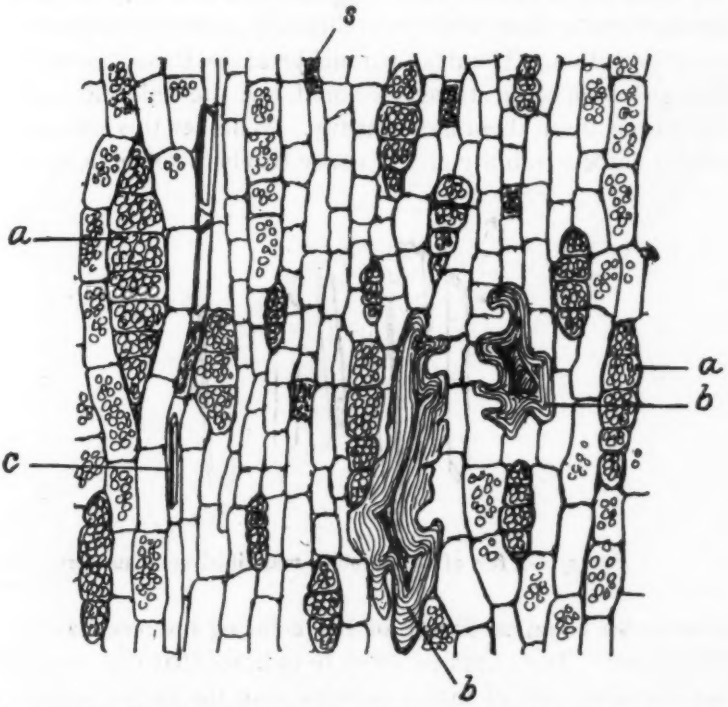


Fig. 54.—Small portion of longitudinal-tangential section of the inner bark of Tsuga Canadensis, magnified about 75 diameters. *a*, *a*, medullary rays, the cells containing much starch ; *b*, *b*, stone cells ; *c*, row of cells containing crystals of calcium oxalate ; *s*, cell containing oleoresinous secretion.

with much larger ones. The latter contained either tannin or mucilage, or both. There were also many cells containing crystals, and scattering stone cells, occurring singly or in clusters of a few. The bast layer likewise contained numerous tannin cells, and these, as viewed in transverse section, were larger than the other cells of this layer. Many of the medullary-ray cells and cells of the pith con-

tained tannin in abundance. Secretion reservoirs were not present in the wood.

Sections of the older bark of this species were studied, and a description published some time ago in this JOURNAL (July, 1895, p. 356). Some of the facts and illustrations are here reproduced. It was shown, *Fig. 53*, that successive periderms were formed, finally invading the inner layer of the bark. These bands of cork were very deep purple, and the coloring matter which they contained was bleached out of them with great difficulty, even by means of Labarraque's solution. The dead parenchymatous tissues between these were also seen to be strongly colored, but the coloring matter was discharged from them more readily. Whether this was due to the greater impenetrability of the corky bands to solvents, or to differences in the chemical nature of the coloring matters, has not been determined. Tests applied seem to indicate that the newly formed bast contained less of tannic matters than the earlier formed parts. Stone cells of large size, and often quite irregular in shape, were scattered without order through all but the youngest portions of the bast layer. It has already been shown that stone cells occur in the middle bark as well.

Fig. 55.—A few of the crystals, magnified 230 diameters.

The bark of the specimens examined contained considerable starch, the tangential rows of large cells occurring at frequent and rather regular intervals in the bast layer, being especially rich in small grains.

The medullary rays were seen to be narrow, being but one cell broad, and in longitudinal-tangential section, appearing as a fusiform

cluster from three to about seven cells long. The cells of the medullary rays were observed also to contain much starch.

The leaves of this hemlock are, when young, of a fine light green color, which, at maturity, changes into a deep but still vivid green. In form they are linear, from one-half to three-fourths of an inch long, and about one-sixteenth to one-twelfth of an inch wide, obtuse at the apex, contracted below into short green petioles about one-twenty-fifth of an inch in length; these readily break away, on drying, from the elevations on the stem on which they are inserted;

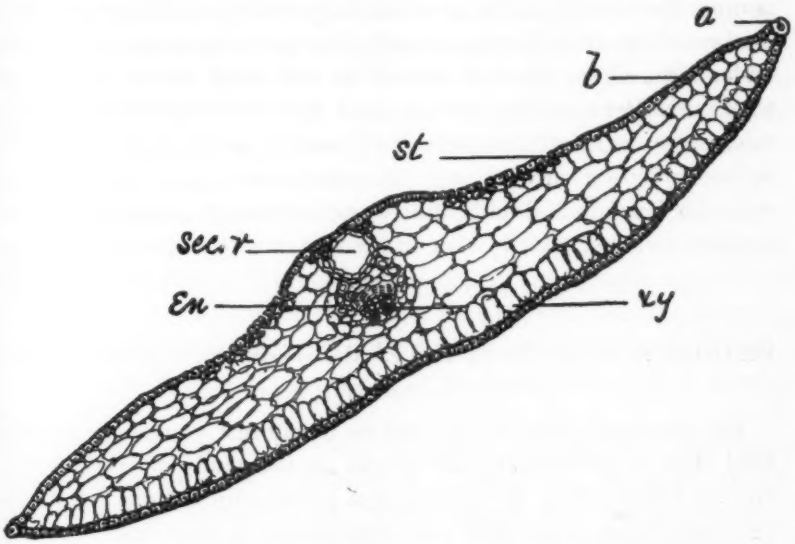


Fig. 56.—Cross-section of leaf of Tsuga Canadensis, magnified about 65 diameters. *A*, large epidermal cell at margin of leaf; *b*, thick-walled epidermis of under surface; *st*, one of the stomata; *sec. r.*, secretion reservoir between mid-rib and lower epidermis; *en*, endodermis; *xy*, xylem.

the margins of the blade are roughened by sharp, anteriorly inclined, rather distant teeth. The upper surface is smooth and deep green, while the lower surface is glaucous-white on each side of the mid-rib. These glaucous areas indicate the position of the crowded stomata arranged in longitudinal lines, about six lines on each side of the mid-rib. The rows, however, are commonly more or less interrupted. A considerable area of the under surface adjacent to the margin is free from stomata, as well as the whole of the upper surface.

A cross-section *Fig. 56*, showed, a thick-walled epidermis, not supported by a sclerenchymatous hypoderma; an epidermal cell at each edge conspicuously larger than the rest; a distinct palisade tissue on the upper side, composed of a layer of large cells slightly elongated in a direction vertical to the epidermis; a more loosely arranged interior parenchyma, also large-celled, and having the cells mostly elongated in a direction parallel to the epidermis and perpendicular to the mid-rib. All of the mesophyll cells were plain-walled and contained, besides protoplasm and chlorophyll-bodies, abundance of tannin; the endodermis was rather large-celled, with walls but little thickened, the cells forming a circle, except for an indentation on the under side, where pressed against by the large secretion reservoir which lies between the mid-rib and the lower epidermis. There were no other secretion reservoirs observed in the leaf The endodermis enclosed a thin area of transfusion tissue, in which was embedded a small, double, fibro-vascular bundle, similar in other respects to those which occur in the leaves of the pines and firs.

(*To be continued.*)

EDIBLE AND NON-EDIBLE MUSHROOMS AND FUNGI.[1]

By Charles McIlvaine.

My principal object to-day will be to interest you in the immense field that is everywhere about you in the study of toadstool life, and in endeavoring to induce you to so study their habits that you may bring your skill and experience to bear upon the cultivation of very many of the wild varieties, assuring you that the field is virtually an unoccupied one, and that success will redound to your honor and profit.

The many and expensive books upon fungi are excellent in their classification and description of toadstools; but their authors, through following one another in assertions and lack of original investigation, falsify their edible and non-edible qualities.

The books are, therefore, of little use in designating which can be eaten and which can not.

Here let me say that I prefer to call all visible fungi—excepting the common mushroom—by their popular name—toadstools—

[1] An address delivered at a pharmaceutical meeting, held at the Philadelphia College of Pharmacy, November 18, 1896.

though a toad never sat upon one, unless he lit there at the end of one of his acrobatic eccentricities.

Nearly all of these books are of foreign origin—most of them English. It may be that the proverbial care of an Englishman for his stomach has something to do with the fear of adding to his bill of fare by experimentation, or it may be that his moral excellence is too great; for I invariably find that the better a person believes himself prepared to die, the more afraid he is to eat toadstools.

Be this as it may, it has been left to Americans to correct the errors of foreign authors, and to largely increase the list of edible toadstools. More than this, it is due to their confirmation, that the poisonous varieties have been segregated from the succulent, and that the certain antidote to the deadly alkaloid which exists in a few of a limited genus has been named.

The interest in toadstools as a useful article of food has been steadily increasing in this country for about thirty years. During the War of the Rebellion, Dr. Curtis, of North Carolina, tested 111 varieties, and published a descriptive list of them, that the soldiers of the Confederacy might benefit from the excellent, healthy food, ever ready at their feet, wherever post was established or a camp-fire lighted.

Later, Mr. Julius A. Palmer, of Boston, published a handsome colored chart of "The Mushrooms of America," showing about twenty kinds. Unfortunately, this chart is, in many respects, incorrect.

Mr. R. K. Macadam, of Boston, has devoted ten years to completing a correct descriptive and comparative list of over 2,000 species of the Hymenomycetes, together with over 7,000 references, found in this country—a stupendous work accomplished quietly by a methodical business man for the love of science alone. Dr. Taylor, Chief of the Bureau of Microscopy, Agricultural Department United States, issued five pamphlets upon the subject. The object was good, the step in the right direction, but the information largely retains the errors of the books.

Prof. Charles H. Peck, New York State Botanist, has done and is doing the most valuable identifying and classifying work ever done on this side of the Atlantic. His labors are published annually in the reports of the New York State Museum of Natural History.

Quite recently, the accomplished artist and author, Mr. Wm. Hamilton Gibson, has brought out the first important and, by far, the most sumptuous American book upon mushrooms and toadstools. It describes and delineates about thirty species, edible and poisonous. I have now in course of preparation a text-book of American species, which will concisely describe most of them, and will state, from my own experience, their edible or non-edible qualities.

In 1881, an accident—an extensive fire, which swept a vast region among the mountains of West Virginia and blackened the wooded sides—revealed to me, as I rode on horseback over the charred mat, the many varieties and enormous quantity of toadstools everywhere studding ground and tree. They were so clean, so beautiful, so luscious-looking, that I said to myself: "There must be varieties among these which can be eaten. Certainly the common mushroom which my father gathered on the Springtun Meadows, and I helped eat with boyish gusto, is not the only fungus fit for food." The first instinct of an old soldier kindled the shout: "Something to eat," and the unvaried bill of fare at the native's log cabin where I lodged, of potatoes and bacon, bacon and potatoes, was lengthened by the addition of anticipated delicacies. By smell, taste and appetizing scrunity, I selected a species which, in every way, invited me to a feast. It was golden yellow, lily-shaped but foliated, white in flesh, veined on the outside, and seductive in the smell of ripe apricots. It grew in fascinating clusters, where beech trees mottled the ground with shadow, or pin oaks allowed warm share of sunlight. Filling my saddle pockets I took them home, cooked a mess, ate it, and, in spite of the prophecy of a frightened family, did not die. The species eaten was the Cantharellus cibarius, a modified form of the Agaricini, a gilled family, the English Free Mason's glory at St. John's Day dinner—the one of which the old botanist Tratinick says: "Not only this same fungus never did any one harm, but might even restore the dead." It grows on the margins of and within the depths of almost every woods in Pennsylvania.

This was the beginning. By careful selection, careful testing, careful eating, I added fifteen or twenty kinds to my bill of fare, by the time Mr. Lloyd P. Smith, then Librarian of the Philadelphia Library, had kindly sent to me Dr. Badham's illustrated book on English fungi. Upon studying it, what was my astonishment to

find that I ought to have been several times poisoned by what I had eaten. Denouncing the old doctor as no good, I obtained, with great difficulty, other books upon the subject. They contained the same startling information. Determining that much error existed in the standard works upon fungi; that toadstools were a much slandered and grossly defamed growth; that here was an open field for investigation and discovery, which would amply repay me in good meals and absorbing interest, I pursued my experiments in eating of them, until, to-day, I have increased the list of edible fungi to 437 kinds, and the work is not yet finished.

I mention this bit of economic and gastronomic history simply to show that persistent, systematic investigation among Nature's products, even in forbidden fields, yields rich reward.

I do not propose to tell you of all the edible kinds, or of all that I ascertained to be poisonous, noxious, undesirable in flavor, or indigestible because of toughness; but to mention the several orders and prominent genera in which both edible and non-edible species are found; to describe the most plentiful varieties, and direct you how to go about determining for yourselves which are edible and which are not; and, as far as my experience goes, suggest plans for the cultivation of the desirable species.

Among fungi, the Hymenomycetes is an order which has the hymenium or seed-bearing surface exposed. It is among the Hymenomycetes that the edible toadstools are principally found. The order is divided into six sub-orders: the Agaricini, in which the seed or spore-bearing surface is spread over gills or modifications of the same; the Polyporei, where it lines tubes; the Hydnei, where it covers teeth or protuberances of many forms; the Thelephoreæ, where it is horizontal and mostly on the under surface; the Clavariei, upon which it is vertical and over the entire surface; and the Tremellini, where it surmounts and surrounds a gelatinous mass, commonly called fairy butter.

The first of these sub-orders, the Agaricini, so-called after the Agari of Sarmatia, contains by far the greatest number of species. Its individuals are found growing everywhere and upon almost everything. Its genera have special habitats, and are as contrary about living there, and there only, as the proverbial Berkshire pig.

The genera are divided into series, determined by the color of their spores. The first genus is Agaricus; the first of the white-

spored series is Amanita. Standing at the very summit of fungoid growth; stately, brilliant, exquisite; like Rappicini's daughter, terrible as beautiful, it fascinates but to slay.

In this genus, Amanita, are found the only toadstools whose poison is fatal to man. Thousands have been their victims. Composed as it is of not over thirty species, it deals, alike, in death and sustenance. Eight of the species are deadly, the others are not only innocuous, but are unsurpassed by any toadstool in delicacy and deliciousness. There are toadstools which contain minor poisons, acrid resins and substances which upset the digestive apparatus, whose evil effects are easily remedied by an emetic, then a wineglassful of sweet oil and whiskey, or vinegar; but other than the eight species of the Amanitæ, none are deadly.

Until 1885 the antidote to amanitine poisoning had been indicated only. In that year there were five cases of toadstool poisoning in a family resident in Shenandoah, Pa. By quick work I was enabled to get specimens of the toadstools eaten. Among them I found the Amanita vernus. Two of the family died; three were saved by the intelligent treatment of the family physician—Dr. Shadle. Noting that the poison present was narcotic and acting upon the nerve centres, especially the one governing the heart, he administered atropine heavily, thus saving the three. I knew the toadstool causing the poisoning; in Dr. Shadle's treatment I had the antidote. After-experiments upon myself and animals enabled me to confirm it. I announced it to the world in the columns of the *Medical and Surgical Reporter*, of this city. For the first time atropine was known to be the antidote to amanitine.

On the first appearance of symptoms of amanitine poisoning—gray pallor, faint breath, thickened tongue, violent retching, $\frac{1}{90}$ of a grain of atropine should be administered hypodermically. This should be continued, heroically, until the $\frac{1}{20}$ of a grain is injected, or the patient cured. Emetics are worse than useless.

I would not dwell so long upon the Amanita, nor tell you this, if I did not feel it my bounden duty before by speech or pen interesting persons in toadstools as a food, and their study as a valuable one, to first carefully caution against the Amanitæ, hoist the danger signal and give knowledge of the remedy if, through ignorance or mistake, one of the poisonous kind is eaten.

A piece as big as a pea will kill a human being as dead as a door-nail. Charles Dickens says: "The wisdom of our ancestors is in the simile"—or I would not use it.

There is no charm, no test, no plan of cooking—which will detect or destroy the poisonous alkaloid, or announce danger in a single variety of the Amanita. In letting the whole genus alone, or in botanic knowledge of its members, is the only safety.

I will describe them. When quite young they are egg-shaped and entirely enclosed within a white sheath. The top of this sheath is pushed upward through the ground by rapid cell-formation within it. It is knob-shaped. In this stage it much resembles the common mushroom, and in mistaking it for the latter is the cause of so many deaths.

This knob increases in size, is thrust upward by the stem beneath it, ruptures the sheath, begins to expand, carrying patches of it on what now becomes the top or cap of the growth. These patches either dry and remain there or are evanescent—disappearing. The stem elongates; the cap expands to hemispherical shape. Reaching from the edge of the cap to the stem, and fastened to it, is a white, thin, kid-like membrane, called a veil. Its object is to shield the seed-bearing surface which it covers from the attacks of enemies. As the cap expands from the hemispherical to umbrella shape, it stretches this veil until it breaks away from the edge or circumference. A fringe of it often adheres to the cap; the body of it collapses about the stem and either remains there, pendulous, in the form of a ring, or, later, if the veil was very thin, as simply a stain.

The plant is now fully grown. It has scabs, or warts, or stains upon the otherwise smooth, kid-like cap, unless the remnants of the sheath are evanescent. The cap may be snow-white, greenish, yellowish, orange, purple, brown—almost any color. Underneath the cap, which has pure white flesh, without unpleasant taste, but smelling faintly of polecat, are (with one exception, where they are yellow) white gills, radiating from, but not quite reaching the point at which the stem enters the cap. The cap is easily separable from the stem. If it is laid gills downward upon a sheet of paper, and a tumbler placed over it to prevent drying, it will shed thousands of white spores. The stem is generally long, round, slightly expanded at the top, but gradually thickens downward until it reaches the sheath from which it sprung; here it is more

or less bulbous. The sheath is in the ground. The ruptured parts remain about the base of the stem as a volva, unless they, too, are evanescent; in such an event there is a remaining stain or a mark, showing where the sheath was adnate or attached.

The scabs or warts, the ring or veil, the sheath or volva are the distinguishing marks of the Amanita. They should be kept well in mind, and a let-alone doubt about the presence of any one of them should rule. The Amanitæ all grow upon the ground. Their habitat is in the woods, or under trees, or where a clearing has been recently made.

The common mushroom never grows in the woods. Remembering this, the collector will not eat of supposed mushrooms found in woods, and may thus save his family the unpleasant necessity for a coroner's inquest.

Again, the gills of the common mushroom are pink, or dark brownish purple; spores purple. The edible Amanita have the same marks as the poisonous. They can be distinguished only by accurate knowledge of their individual appearance, just as you distinguish roses, apples, potatoes, and, without hesitating, name them, noting their comparative goodness.

If by any chance a species of toadstool should be eaten which produces unpleasant effects within three or four hours, one can surely know that one of the minor poisons is at work; for poisoning by the Amanita does not exhibit a single symptom under from eight to ten hours after eating.

So much for the Amanitæ. I leave the genus with the skull and cross-bones upon it.

Next to it comes the sub-genus, Lepiota, from a very crooked Greek word, meaning a scale. It is closely allied to the Amanita, but the sheath at the base of the stem is always absent. The volva, which covered it in youth, is concrete with the skin of the cap, and remains there permanently attached as scales, warts or fuzzy tufts, but that part which was at the base is absorbed by it. The ring is manifest; in some species it is movable. The gills are white and distant from the stem, which rests in a socket in the cap and is easily detached. Many of the larger ones are delicious. I know of none which appeal to the pleasurable senses that are noxious. Some are too strong to be enjoyable.

Most of the species grow from the ground; several are found in

hot-houses; some grow from sawdust, spent tan and like mediums. There is one species—the Vittadini—a large, white plant, covered with floccy drapery, growing solitary in the woods, which is said to be poisonous. I have never found but one specimen, and, so, have not yet tested it. It is an intermediate, and should be relegated to the Amanita. There are over thirty species of the Lepiota.

Some mycologists have separated from the Amanita a few species which do not have the ring, but retain the volva in the shape of a vagina, clinging close to the not bulbous stem, and made a new sub-genus—Vaginatus. Most of you are familiar with a slender-stemmed, tall, bluish-gray capped toadstool, quite Quakerish in appearance, showing a ribbed or sulcate surface on the top, which grows singly on lawns, under willows, oaks, chestnuts and in the woods. This species is the Vaginatus Cecilia. It is tender as choice asparagus and more delicate in flavor. Another species, more robust than the Cecilia, but like it in all respects, excepting its bright chestnut-colored cap, is equally as fine eating.

In the genus Tricholoma there are between 80 and 100 species, none of which are noxious; most of them are excellent; a few are uninviting to sight, taste and smell. The mark distinguishing this from all the white-spored genera is that the gills are sinuate—that is, connected with the stem by a sinus—a tooth.

The sub-genus Clitocybe, meaning steep declivity, because the stem dilates at and is continuous with the top; the gills are, therefore, attenuated behind, acute, adnate or decurrent, never sinuate. They grow upon the ground. Notwithstanding that the books say: "very few are edible," very many of the upwards of seventy-five species are good as any; others are tough; some strong in taste and odor. I do not believe there is a poisonous species among them.

Another sub-genus, the Collybia—meaning a small coin—numbers in the neighborhood of seventy-five species. The stems have cartilaginous cuticle and are rooting. They grow upon wood, leaves, even fungi. The caps of many of them are very fine eating. None of them contain even minor poisons. Some are tough, others strong. One species, which is often found upon wooded lawns, with an attractive mouse-colored top, very wide white gills, tall, thin stem, and very long pointed root—the Longipes—is as good as any.

I pass the several sub-genera, containing the smaller-sized species, until we reach the Pleurotus, from two Greek words, meaning a side and an ear. These grow in clusters, and rarely upon the ground; the most familiar one to you is the Ostreatus, or oyster toadstool, which is very common from early spring until far into the winter. It is especially fond of poplar logs, and the stumps of poplar and hickory. It grows from a side stem, and is found in dense, overlapping clusters, very closely resembling the oyster in color; the gills are white, sometimes slightly tinged with yellow on the edges, and the whole plant has a sweet, spicy smell.

The very young specimens, or the old ones when the tough part near the stem is removed, make a delicious stew, but require slow cooking for half an hour. I have frequently found large clusters in midwinter by following the tracks of cows in the snow upon the West Virginia mountains, when I noticed them leaving the main trail of the herd. They evidently form part of the Materia Medica of cows, and are detected at as much as the distance of 100 yards by scent alone; for at this distance from the main trail I have noticed where cows have scented them, gone directly to them and pawed them up from under snow eighteen inches deep. They do not eat the entire fungus, but break it up with their hoofs and scatter portions of it over the snow. I had a similar experience near Springton Forge, in Chester County, Pa.

Cows break up, in like manner, the large Lycoperdon giganteum.

The Pleurotus ulmarius, which grows only upon the elm tree and in the autumn, often attaining a diameter of 1 foot, is common where elm trees are plenty. I have seen the trees in Boston Common loaded with them. The tender parts of them, after long cooking, are reasonably good; but if not sufficiently cooked are as tough as saddle-flaps. None of them are poisonous, several are excellent, many are too tough to be used for food. There are over half a hundred species.

A large genus, the Lactarius (from *lac*, milk), is known by its exuding milk when the stems or caps are broken. Many of this species are esculent; none of them are poisonous; several of them are large, white and showy; with two exceptions they grow from the ground; they are found in the woods in great quantity. There is one large species, the Piperatus, which is quite common. On tasting it one is disposed to think that spontaneous combustion has

suddenly occurred in one's mouth. All mycologists give it a bad reputation, and name it among the deadly poisonous fungi. I have had more pen-fights over it than a few. I have eaten it dozens of times, and have fed my family on it without other than pleasant results. It loses its fiery qualities on cooking, and, though a coarse species, is much more tender and quite as savory as many of the vegetables we eat. They, together with many other toadstools, are found in such plenty that they become an easily gathered and valuable fertilizer. Containing, as they do, a large amount of nitrogenous matter, the gathering of them is worth the attention of agriculturists and horticulturists.

By far the most numerous sub-genera of the Agaricini is the Russula, meaning reddish. They are the peasants among toadstools, and dot the ground thickly, from early spring to Autumn, wherever leaf-mould or shaded sod affords their beloved habitat. Standing on their single stem—thin, thick or corpulent, with tops of many hues and shapes, gills straight, even and brittle—they are the most independent and sturdy of fungoid growth. Most of them are sweet and nutty to the taste; some are hot as the fieriest of Cayenne, but this they lose upon cooking. To this genus authors have done especial injustice; there is not a single poisonous species among them, and, where they are not too strong of annisette and other highly flavored spices, they are all edible; most of them are among my favorites. Where they present no objectionable appearance or taste, their caps make most palatable dishes when stewed, baked, roasted or escallopped. Here let me say that, in cooking all varieties of toadstools, they should be cooked precisely as is the oyster. The time of cooking should be determined by the consistency of the variety; some will cook in five minutes, others not under thirty. Salt, pepper and butter are the only necessaries as seasoning. The aim should be to preserve as nearly as possible the natural flavor. It is culinary heresy to soak them with gravies or smother them with foreign flavors.

If the Russula could be grown artificially, it would be far more popular and profitable than the common mushroom, but it is harder to move from its natural settlements than the North American Indian. It has been claimed by mushroom growers, until within the last few years, that the spores of the mushroom have to pass through the digestive apparatus of the horse before they will germinate. My

friend, Mr. S. Edward Paschall, formerly of Doylestown, now of West Chester, than whom no one knows more about what a mushroom will and will not do, and who, by his indefatigable labor and persistent experiments, has succeeded in making an American spawn, which is more productive and quicker in fruiting than the best imported spawn from either England or France, has conclusively demonstrated that such a transmission is not a necessity. It was for a long time my opinion—following the opinion of others—that such assistance was necessary. In my many efforts to propagate valuable food species of the wild toadstools, I endeavored to find the method by which the spores were disseminated, and through what digestive medium they passed—either of insect or animal—before germination. Noticing that the Russulæ were fed upon by a small black beetle, I planted in suitable places, not the toadstools, but the beetles found upon them. The result was that in several instances I grew the Russulæ. My experiments, while interesting, are not conclusive, because I later found that the same results could be obtained from the toadstool itself when planted under its own natural life conditions.

The beetles known as tumbler-bugs deposit eggs in the centre of balls made of animal droppings; dig a hole in the ground and dump them into it. These droppings frequently contain the spores of the meadow mushroom. Thus planted with the proper surrounding of manure, and at the proper depth, the spores germinate, spread mycelium, and a crop of mushrooms is the result. The beetle becomes a horticulturist. No wonder the Egyptians, thousands of years ago, made it—the scarabus—their sacred emblem, and that, to-day, the *fleur-de-lis* of France, so the Rosicrucians say, perpetuates its glorious worth and calling.

While upon the subject of toadstool propagation, there are several species which will amply repay the attention of horticulturists. My experiments, but few of which were successful, have thus far shown me that the line of success lies in assisting toadstools in disseminating their spores and mycelium within territory and conditions natural to them. The Lepiota procerus—the parasol toadstool I have described—can be grown in quantity by tramping the ripe spores into where old wood piles have been, and into leaf mould on the margins of woods. The Cantharellus cibarius, also described, and one of the most prolific, weight-giving, palatable toadstools there

is, can be easily increased by transplanting the mycelium within the immediate region in which it is found. Enormous crops could thus be raised without other attention. They keep a long while after gathering—in fact, are readily dried for winter use. They carry in bulk, are the most attractive of all toadstools when displayed, and, once introduced into our markets, will be eagerly sought for at good prices.

The sub-genera and species I have described, you will remember, are all of the Agaricini and all white-spored. In the series having pink, brown, purple and black spores there are genera corrresponding to those of the white-spored series, with the exception of the Amanita and a few others. In these genera are many excellent esculent species. The time allotted me prevents describing them. I will, therefore, dwell only upon the purple and black-spored toadstools, they being in many of their varieties of greater interest to the horticulturist.

The common mushroom is an Agaric, bearing purple spores upon its gills. Its method of artificial propagation is well known to all of you. First what is called virgin spawn is made. This is obtained by taking the scrapings of public roads, spots where horses have stood on fair grounds, from the well-trodden mill-tracks about horse-driven grinding machines, and like places. This is mixed with a carefully prepared medium of horse manure, and left to stand at a carefully regulated temperature. The spores contained in the scrapings germinate, throw out the mycelium, which permeates the entire mass. When it has thus done, its further development is stopped by pressing the mass into bricks, and by gentle heat driving all moisture from them. These bricks then contain what is called virgin spawn. The spawn of commerce is either made from these bricks, or from inserting pieces of the virgin spawn into masses of a like prepared medium. The spawn or mycelium runs through the additional mass, is again stopped in its growth, and bricks are made from it. It is evident that the nearer to virgin spawn, the purer and better the crop of mushrooms produced from it will be. The production of mushroom spawn is an important industry in England and France. Large quantities of it are imported to this country by our well-known seedsmen, and sold to mushroom raisers. The importance of procuring good spawn is equal to the procuring of the best seed, or plant, or any other cultivated growth.

Success in raising mushrooms depends largely upon the proper treatment of the manure intended for mushroom beds, and upon preserving a certain uniform temperature.

There is another genus among the Pratelli, or purple-spored series, called Hypholoma, meaning web-fringe. Its members grow on wood in groups, often in fasciculate, overlapping masses. The books say: "The species are not edible, the tough ones being bitter, and the fragile ones almost devoid of flesh." I wish to draw your attention particularly to this genus, because it contains several members which I believe, when known, will equal if not exceed all others in economic value.

Most of them are found in the woods, growing from or about stumps or decaying roots in the ground; frequently they protrude in great clusters from around the base of posts. The several species vary in shades of yellow and brown; their caps are from 1 to 6 inches across; their stems are short or long, as the number in the cluster permits; there is a floccose veil, or remnants of one, about the stem; the gills are greenish, olivaceous or greenish shades of yellow. They are showy and easily recognized. They are found from September until mid-winter; I have gathered them when frozen as hard as—well, the first biscuit of a maiden's make. The flesh is solid, white or yellowish; the taste is acrid, or bitter, or saponaceous. Patches of them—and they are frequent in almost every woods in the land—often yield several bushels. Thousands of tons of them annually go to waste. When a bunch of them is found, cut the caps off carefully without pulling up the stems, which latter destroys many young ones and injures the mycelium. Brush the caps off; lay them gills downward in your basket, as you should always do any fungus intended for the table, to prevent dirt from getting among the gills, from which no amount of washing will dislodge it. Cut the caps in pieces after washing, and stew, or bake with bread crumbs, for half an hour. Season, and when nearly done put in a little lemon-juice—never vinegar—or, better still, a little sherry or Madeira. You will have a feast fit for the gods—hardly a fair fitness; for I suspect that, were the old gods to cut up their old-time capers now, their fare would be that of our prisons.

As a pickle, these varieties of the Hypholoma have no superior. Country people have an immense, healthy, never-failing food supply at hand for the gathering. They can be dried for winter use.

The black-spored series, the Coprinarii, from a scratchy-looking Greek word, meaning dung, are more familiar to the horticulturist than any other, because they inhabit their manure and compost heaps, and are abundant upon the droppings in the fields. They are the scavengers of the toadstool family. Yet among them are found the most tender, toothsome kinds. The little brown-capped, black-gilled, slender-stemmed Coprinus micaceus, whose tops frequently glisten as if sprinkled with fine mica, is a great favorite with all mycophagists, which outlandish word means toadstool eaters. From early spring until frost they grow singly, or in inviting clusters upon manured lawns, about yard posts, from gutter sides, and, generally, where there is rich living for them. Though small, seldom over an inch in diameter, their plentifulness soon fills the collector's basket. They make a rich, black dish, after ten minutes' stewing. At one time I almost lived on those I gathered along the street sides of Haddonfield; but I have taught so many friends their lusciousness, that the ungrateful wretches now rob me of my food supply. When once a person is inoculated with the virus of toadstool eating, all gratitude, friendship, even family ties vanish, and he or she will race for an edible toadstool, if but seen through a telescope.

The Coprinus comatus, or maned toadstool, is plentiful in our markets after summer rains. It is sold under the name of truffle. The truffle grows under ground. It has never been found in America, and has resisted all efforts made to naturalize it as a denizen. The Coprinus comatus grows in dense clusters, from ashes and dumpage, or places rich in salts of lime or potash. It is oval in shape, coated with revolute scales in concentric rings, is maned on the edges of the cap by fragments of the veil, has black gills, and, like most of the Coprinarii, deliquesces into an inky fluid. Both caps and stems are fine eating. It is very prolific and, I have no doubt, can be cultivated by transplanting the mycelium. Early in the spring, you will find many small, brown-topped toadstools, not larger than a ten-cent piece, scattered all over your lawns and grassy fields. Gather the tops and eat them without fear; they are luscious. All the black-spored species are innocuous, excepting one, which is a rapid and effectual intoxicant.

It is the C. papilonaceus. It grows from dung, is about 3 inches high, caps hemispherical and coated with scales when dry,

which gives it a variegated or butterfly appearance, hence its name. The gills are very broad and blackish. It is quite common from July to November. No cheaper or more effectual spree is by Nature provided.

In the order of Hydnei, having teeth-like protuberances upon which the spores are born, there are a few edible varieties. Their occurrence is not frequent in this section of the country. Among them is the Hydnei repandum, which grows upon the ground, and some of the Medusa-like growths found upon trees; they are sufficiently tender for food; the others are too tough.

The order Polyporei (*χάϊι-ī*), having tubes in which the spores are produced, and from whose many mouths they are shed, includes many delicate and valuable species in its first sub-genus, Boletus. They all grow upon the ground; none of them are poisonous. One —the Boletus felleus, a large, handsome, brown-topped fungus—is excessively bitter; this bitterness does not leave it on cooking and renders it unpalatable. The Boleti are found in great quantities in woods and on their margins. There are over seventy species. When they appeal to the eye, and are not water-soaked or wormy, they make tasty meals. The tubes are detachable and should be removed from the long-tubed species. Cook half an hour, broil, fry or roast like chestnuts. The species of Polyporus, seen growing everywhere upon trees and fallen branches, are too woody to masticate, excepting the Fistulina hepatica, or liver fungus, which grows from stumps and the decaying crannies in trees. It is superior to any tenderloin ever cooked. It resembles, somewhat, a calf's tongue, but I have seen it a foot and more in width. I have tried to cultivate it by planting pieces of it in stumps, but have not yet had a single result other than disappointment. I believe it can be done, and it is well worth persistent effort. When we can grow such excellent steaks from stumps, beef will be cheaper.

The Clavarerei grow from the ground, generally in woods, and are frequently branched like deer horns. They cannot be mistaken. None are poisonous. Many make the most savory of stews. Some are tough as shoe-strings. They are often found in large patches and tufts. They could be used as the mallow and Iceland moss are in confections.

The Lycoperdons, or puff balls, are numerous in species. They are all edible when the flesh is white, not tinged with yellow, or

water-soaked. Cut in slices, fried or stewed, they are remarkably tender and of delicate flavor. In one genus—the Scleroderma—is found the Scleroderma vulgare. It is very plentiful under beeches and along the rooted banks of rivulets. In size it resembles a walnut. Its skin is brown and rough. When quite young, the flesh—solid as a potato—is white. It then changes to purple, and finally to a deep black, in its granulated appearance resembling gunpowder. As long as it remains solid it is good eating, but must be well cooked.

I am compelled to pass hundreds of species to which I would like to draw your attention; the field is too large to cover with a single paper. If I have succeeded in interesting you in the vast food supply which invites your investigation and cultivation, I have done a good thing for you, and have removed somewhat of the stigma which attaches to my little friends—the toadstools.

I have seen, this year, a large and paying crop of mushrooms grown on a meadow where pieces of spawn had been inserted in the sod. This inserting should be done after the spring rains are over, and the dry season well set in. Too much moisture will invariably kill spawn. The horticulturist will have ample remuneration from spawning unshaded ground.

GLYCERITE OF LICORICE.

By Joseph W. England.

Probably the most generally popular products used to mask the taste of bitter and nauseous drugs, given in liquid form, are to be found in preparations made from licorice root, despite the fact that none of them, as at present made, are fully representative, or free from objectionable features. The notoriously variable quality of commercial extract of licorice is an open secret. The fluid extract is acrid from the resin dissolved by the alcohol of the menstruum used in making it. The official "pure extract" does not have the pure licorice flavor, and is apt to become mouldy. The purified extract of the "National Formulary," intended doubtless to replace the well-known "Succus Liquoritiæ" of commerce, is the best product of all, but its merits are marred by a "strawy" taste, the probable presence of vegetable spores and the absence of definite strength. Ammoniated glycyrrhizin no more represents the full

flavor of pure licorice extract than do a few grains of caffeine a cup of good coffee. It is entirely odorless. That licorice root yields volatile principles is well known, especially to those who reside in the vicinity of licorice-extract-making establishments, where, for squares around, the atmosphere is laden with the odors of boiling licorice solutions.

It is obvious, then, that a satisfactory liquid licorice preparation should be one holding in solution all the desirable soluble proximate principles, free from acrid resin or other undesirable products, of full odor and taste, and standardized to a definite strength. These results the writer has endeavored to obtain by the following process:

Take of:

Powdered extract of licorice	8 troy ounces.
Water	32 fluid ounces.
Ammonia water	1 fluid ounce.
Glycerine, a sufficient quantity.	

Sift the powdered extract of licorice upon the water and water of ammonia contained in a capacious agate-ware pan, dissolve as far as possible and pour the mixture upon a specially prepared sand-bed (to be hereinafter described) contained in a half-gallon glass funnel. Let stand for twelve hours, or over night, collecting percolate. Then, with a small porcelain capsule, remove the gelatinized, starchy mass that has formed upon the surface of the sand-bed. Add water and continue the percolation until the soluble matter in the bed has been practically washed out. Mix percolates, note volume in fluid ounces, evaporate 1 fluid ounce on a water-bath to a constant weight, weigh, estimate the number of grains contained in the reserved percolates, and divide by 240 to obtain the number of fluid ounces of a 50 per cent. by volume solution that can be made. Then, by means of a sand-bath, carefully evaporate the reserved percolates down to *three-fourths* of the estimated volume, and add sufficient glycerin to make up the volume. Care must be used, especially during the latter part of the evaporation, that the product be frequently stirred and not be too highly heated, as it is then very readily scorched. If, during evaporation, turbidity should occur as a result of too long a heating, clearness may be restored with a few drops of ammonia water.

While the evaporation of percolates is proceeding, another lot of

the licorice extract mixture may be percolated through the *same* sand-bed, and the process duplicated, or a larger sand-bed may be used and the process followed on a larger scale. Doubtless, working on an extended scale, the sand-bed could be made quite large; steam heat, with a vacuum apparatus, could be employed, and working details could be profitably modified.

Ammonia water is added to the licorice extract mixture to bring into solution the uncombined glycyrrhizin of the powdered extract. The excess of ammonia water is eliminated by the after-heating.

The success of the process depends upon the manipulation of the sand-bed and the carefulness with which the percolates are evaporated. To prepare the sand for the bed, take fairly coarse washed bar sand, and remove sticks, stones, etc., with a No. 20 sieve. Clean the sieved portions thoroughly with washings of boiling water, and dry, heating strongly. To make the bed, place a flat piece of absorbent cotton, wetted on the under side, in the bottom of the funnel and fill the latter with the cleaned sand to within an inch or two of the top. If a larger glass funnel be used, it need not be filled quite so full, but, to a degree, the broader the surface of the sand-bed used, the better the results. Percolation commences quickly, but slows up in a short time. If the first portions of percolate be turbid, they should be returned to the funnel.

The gelatinized, starchy mass that is formed upon the surface of the sand-bed is sometimes an inch or more deep. It is nearly black from the presence of a portion of the soluble principles of the extract. But the amount of the latter is of no practical moment, and is compensated for by the subsequent standardization. By removing the gelatinized mass before continuing percolation, the latter is made much more easy. With care, the same sand-bed may be used for a number of operations.

With the formula above mentioned, the mixed percolates obtained by the writer amounted to about 40 fluid ounces. More than this makes no practical difference, as the solution is standardized, but it is desirable to have as small a volume as possible, in order to diminish the time of evaporation, and reduce the danger of an empyreumatic product.

The powdered extracts used by the writer averaged 40 per cent. of insoluble matter. The amount usually allowed by manufacturers is 35 per cent., but the percentage varies according to the age at

which the roots have been gathered; the younger the roots the more starch they contain, and the more insoluble matter there is in the extract made from them. In some countries, young and old roots are gathered indiscriminately; in others the older or mature roots alone are collected. With a powdered extract of licorice containing more than 40 per cent. of soluble matter dissolved in the quantity of water mentioned in the above formula, it is obvious that a more dense solution would result, and it is probable that the formula given would need some modification—more water and a larger sand bed, for instance.

The standardization of the mixed percolates is a simple matter. Assuming, for example, that we have 41 fluid ounces of percolates, and that 1 fluid ounce has been found to contain 60 grains of anhydrous extract, it is evident that there are 2,400 grains of extract in the 40 fluid ounces reserved, a quantity sufficient to make 10 fluid ounces of a glycerite of licorice containing 240 grains to the fluid ounce. Then, if the product is to contain 25 per cent. by volume of glycerin, it will only be necessary to evaporate the 40 fluid ounces down to 7½ fluid ounces, and add the glycerin.

The product as thus made is a black, syrupy liquid, having the characteristic odor and taste of pure licorice. It is different in physical properties from the usual preparations, being free from any objectionable taste or ingredient, and standardized to a definite strength. It seems to be permanent in keeping qualities, samples made by the writer several months ago having remained unchanged.

Syrup of licorice may be made extemporaneously from the glycerite, in the proportion of one-fourth by volume of glycerite to three-fourths by volume of syrup.

The writer is pursuing experiments upon the making of the syrup and other licorice preparations with the glycerite, and hopes to report upon these later.

A CONVENIENT DRYING BOX.

By Thomas S. Wiegand.

The very many instances in which the pharmacist and those engaged in chemical pursuits require some easy method of desiccating various substances in larger quantities than can be done in the glass desiccators in common use in laboratory work, induced me to call

attention to this apparatus, having used such a one for many years, with most satisfactory results. It consists of a box made of good, sound wood, free from loose knots or cracks, the joints being well closed. It should be made of planed boards, so that paper pasted on the inside will adhere closely; the lid should fit tightly and the edges of the box should be lipped with soft leather or sheet rubber. A tray must be provided in which freshly burnt lime is to be placed, and upon the sides of box cleats are fastened at convenient distances to support wire frames, upon which the substances to be dried are placed. The case should then be closed tightly by means of hooks of such a character that the closer they are pressed to their supporting pins the tighter they draw the lid down. Lozenges of a hygroscopic character can be dried in two days' time, so that they become brittle. Tough roots, like gentian and althæa, after having been kept for a time in the case, can be readily ground. Tartaric acid, bicarbonate of potassium and other moist chemicals, if kept for a time in the drying box, will be found in excellent condition for use. Leaves containing volatile ingredients, which are liable to be dissipated by heat, will soon be fit for powdering and found to retain their natural components unaltered.

IS ALCOHOL A SOURCE OF ERROR IN VOLUMETRIC ANALYSIS?

By Lyman F. Kebler.

About a year and a half ago, while making a careful study of the relative sensitiveness of the various indicators, the writer and Mr. C. H. LaWall observed what appeared to be an affirmative answer to the above question. A few experiments were made by the writer, with various samples of commercial alcohol, when it was found that they all exercised a disturbing influence. It was found, however, that alcoholic solutions of the same strengths yielded fairly concordant results, *i. e.*, the disturbing factor was constant. Moreover, a 15 per cent. solution did not appear to affect the results. Should future investigations prove this observation to be correct, then it would be necessary to make due allowance for all volumetric work in which alcohol forms an essential solvent. This would not only be the case with strong alcohol, but for various strengths also. It might be necessary to establish a co-efficient of disturbance. A

moment's reflection will show how far-reaching the results would be. All of our data based on Koettstorfer's method would need revision, if accuracy is desired. A large majority of the results obtained for alkaloids and alkaloidal residues by means of volumetric methods, during the last few years, would be inaccurate.

On looking over literature, somewhat, it was soon found that a Mr. Th. Salzer[1] had recorded an apparent disturbing influence of alcohol on the end-reaction of litmus. He soon discovered, however, that the disturbing agent was not the alcohol, but an impurity in the alcohol. That commercial alcohol almost invariably contains impurities is not new. Toxicologists have long since demonstrated such to be the case. The next communication that appeared on this subject was presented to the American Pharmaceutical Association,[2] last August, by Prof. C. Caspari, Jr. Since this contribution has been widely copied, especially in pharmaceutical journals, some of the results will be reproduced in this paper for comparison. This worker presented the results of a goodly number of experiments, but he neglected first of all to investigate the purity of the alcohol employed. Prof. Caspari says: "The only explanation that can be offered for this peculiar behavior of alcohol, is on the basis of Arrhenius' theory of electrolytic dissociation as detailed in the writings of Prof. Ostwald."

The writer, having employed alcohol largely in many volumetric analyses during the past number of years, especially with alkaloids and alkaloidal residues, proposed to determine whether alcohol did materially influence volumetric work, and, if so, what per cent. would vitiate such estimations. The commercial alcohol employed was carefully examined and found to possess the following properties: Colorless; free from foreign odor, when diluted with one-third its volume of distilled water and allowed to evaporate spontaneously from blotting-paper; specific gravity 0·8179 at 15° C.; 50 c.c. yielded an unweighable, slightly colored residue; with silver nitrate the alcohol produced a slightly brownish tint on standing six hours, showing that a limited amount of organic impurities, such as amylic alcohol, aldehyde, etc., was present. This product will be designated commercial alcohol in this paper.

---

[1] 1895, *Apotheker Ztg.*, **10**, 48.

[2] 1896, AM. J. PHARM., **68**, 473.

The indicators used, the methods of preparing their liquid solutions, and the amounts of these solutions employed per titration, were as follows: Brazil wood, 3 grammes of the cut wood were boiled with 10 c.c. of water for about five minutes, cooled, decanted, and 10 drops used per titration.

Cochineal, prepared according to "Sutton's Volumetric Analysis," sixth edition. Five drops used per titration.

Hæmatoxylin, 1 gramme dissolved in 100 c.c. of alcohol, and 3 drops used per titration.

Iodo-eosin, 1 gramme dissolved in 500 c.c. of diluted alcohol, and 5 drops employed per titration.

Fluorescein, 1 gramme dissolved in 100 c.c. of 50 per cent. alcohol, and 10 drops used per titration.

Lacmoid, 1 gramme dissolved in 500 c.c. of 50 per cent. alcohol, and 15 drops used per titration.

Litmus, prepared according to "Sutton's Volumetric Analysis," sixth edition, and 10 drops used per titration.

Methyl orange and tropæolin OO, 1 gramme dissolved in 1 litre of water, and 5 drops used per titration.

Phenolphthalein, 1 gramme dissolved in 1 litre of diluted alcohol, and 8 drops used per titration.

Rosolic acid, 1 gramme dissolved in 10 c.c. of diluted alcohol, and made up to 100 c.c. with water. Five drops were used per titration. The above indicators were selected, after testing them, from the best material obtainable in the market.

The normal sulphuric acid was standardized by means of Weinig's method. A tenth normal acid solution was prepared from this. An approximately normal alkaline solution was made up from the best potassium hydroxide obtainable, and its factor established by titrating it against the normal sulphuric acid. Hæmatoxylin was taken as the standard indicator. From the normal alkaline solution an approximately fiftieth normal solution was prepared. Its factor was established by titrating it against the tenth normal sulphuric acid. The fiftieth normal alkaline solution was used in all of the work, because it has been found, by careful experimentation, that this strength is fully as well adapted to this kind of work as the centinormal solution, if not better. The writer thinks the end-reaction is slightly sharper and more decisive. The water was taken directly from the still after a number of gallons were distilled.

All end-reactions having been established, the indicators were carefully compared with one another in water, commercial 47 per cent. alcohol and commercial 94·5 per cent. alcohol; 25 c.c. of the respective liquids were placed into a beaker, the indicator added, and enough fiftieth normal alkaline or tenth normal acid solution added, drop by drop, until the desired end-reaction was produced. For ready comparison, Professor Caspari's results of analogous mixtures are given parallel with those of the author. They are as follows:

Indicators.	C. Caspari.			L. F. Kebler.		
	The amount of $\frac{N}{100}$ KOH solution or $\frac{N}{10}$ H_2SO_4 solution required to produce the desired color reaction in 10 c.c. of the following:			The amount of $\frac{N}{50}$ KOH solution or $\frac{N}{10}$ H_2SO_4 solution required to produce the desired color reaction in 25 c.c. of the following:		
	Water.	Diluted Commercial Alcohol.	94·5 Per Cent. Commercial Alcohol.	Water.	Diluted Commercial Alcohol.	94·5 Per Cent. Commercial Alcohol.
Brazil wood	5 drops.*	1· c.c.	1·6 c.c.	0·1 c.c.†	1·4 c c.*	2·6 c.c.
Cochineal	0·2 c.c.	0·80 c.c.	1·4 c.c.	0·2 c.c.	1· c.c.	1·5 c.c.
Hæmatoxylin	1 drop.	0·65 c.c.	1·25 c.c.	0·1 c.c.	1·5 c.c.	2·9 c.c.
Iodo-eosin	—	—	—	0·3 c.c. $\frac{N}{10}$ acid.	1·3 c.c. $\frac{N}{10}$ acid.	1·8 c.c. $\frac{N}{10}$ acid.
Fluorescein	—	—	—	0·7 c.c.	1·3 c.c.	1·9 c.c.
Lacmoid	2 drops.	0·45 c.c.	0·7 c.c.	0·1 c.c.	0·9 c.c.	1·3 c.c.
Litmus	2 drops produced decided purple blue.	0·2 c.c – 0·65 c.c.	1·10 c c.	0·1 c.c.	0·7 c.c.	1·6 c.c.
Methyl orange	1 drop to 0·1 cc. $\frac{N}{10}$ acid.	1·10 c.c. $\frac{N}{10}$ acid.	3·5 c.c. $\frac{N}{10}$ acid.	0·3 c.c. $\frac{N}{10}$ acid,	?	?
Phenolphthalein	—	—	—	0·3 c.c.	1·9 c.c.	4· c.c.
Rosolic acid	—	—	—	0·1 c.c.	1·1 c.c.	2·9 c.c.
Tropæolin OO	1 drop to 0·1 c.c. $\frac{N}{10}$ acid.	1·10 c.c. $\frac{N}{10}$ acid.	3·5 c.c. $\frac{N}{10}$ acid.	0·2 c.c. $\frac{N}{10}$ acid.	?	?

* When not specified, the $\frac{N}{50}$ KOH is understood.

† 0·1 c.c. gave about two drops.

The next set of experiments executed were made with a view of determining the amount of alkaline solution required to neutralize a given amount of $\frac{N}{10}$ acid solution in 50 c.c. of water, diluted commercial alcohol and 94.5 per cent. commercial alcohol. For ease of comparison, the writer's results are given on the basis of centinormal alkaline solution. The results given, divided by two, equal the data actually obtained by the writer. The results are as follows:

Indicators.	C. Caspari.			L. F. Kebler.		
	Number of c.c. of $\frac{N}{100}$ alkaline solution required to neutralize 10 c.c. of $\frac{N}{10}$ acid solution in 60 c.c. of the following:			Number of c.c. of $\frac{N}{100}$ alkaline solution required to neutralize 10 c.c. of $\frac{N}{10}$ acid solution in 50 c.c. of the following:		
	Water.	Diluted Commercial Alcohol.	94.5 Per Cent. Commercial Alcohol.	Water.	Diluted Commercial Alcohol.	94.5 Per Cent. Commercial Alcohol.
Brazil wood	98.57	103.10	106.28	100.	102.	105.6
Cochineal	98.52	101.79	104.07	99.83	101.2	102.5
Hæmatoxylin	98.17	100.83	103.15	100.	102.8	106.8
Iodo-eosin	—	—	—	98.80	100.4	101.3
Fluorescein	—	—	—	101.6	103.2	104.5
Lacmoid	99.06	101.13	102.71	99.6	102.	102.4
Litmus	98.66	103.40	106 32	98.80	101.	102.9
Methyl orange	—	—	—	99.03	100.	93.2
Phenolphthalein	100.16*	106.72	109 24	102.2	104.4	110.
Rosolic acid	—	—	—	102.	103.3	106.7
Tropæolin OO	98.42	96.11	74.65	100.5	98.09	95.6

*Caspari standardized his solutions by means of phenolphthalein.

The above results conclusively show that commercial alcohol does exert a disturbing influence in volumetric analysis with all the indicators employed.

From the above commercial alcohol a purified product was prepared. Four litres were carefully distilled on a water bath, discarding the first and the last 200 c.c. The exit tube of the flask was provided with a bulb, such as is used in Kjeldahl's method for the estimation of nitrogen, designed especially to prevent undesirable

material from being caried over mechanically. The residue from these 4 litres was decidedly acid to litmus paper and possessed an acetic acid odor commingled with fusel oil and pyridine. This residue, on being largely diluted with water and titrated with fiftieth normal alkaline solution, required 1 14 c.c.[1] The last 200 c.c. of the distillate also required 5·9 c.c. of the same alkaline solution to render it neutral. The 3,600 c.c. were again distilled as above, and the first and last 100 c.c. discarded. The residue again required 22·5 c.c. of fiftieth normal potassium hydroxide solution. In the second distillate five grammes of potassium hydroxide were dissolved and allowed to stand over night. In the morning the alcohol was again distilled on the water bath. Fifty c.c. of the first and last portions were discarded. The alcohol was next distilled over tartaric acid, to remove any alkaloid-like bodies. The distillate was next treated with silver nitrate over night, and distilled in the morning. Now, in order to ascertain whether any acid was developed during the course of the distillation, the last distillate was again distilled, and the residue titrated with the alkaline solution. One-half c.c. was required. This demonstrated that an extremely small quantity of the alcohol was oxidized during the distillation, if any. This purified alcohol possessed the normal specific gravity of 94·5 per cent. alcohol, showing that no water had been absorbed during the purification.

From the commercial alcohol an absolute alcohol was also prepared. It contained 99·7 per cent. of alcohol.

With these purified products the following results were obtained:

[1] This supports the remark made by the writer at the Montreal meeting of the American Pharmaceutical Association, viz.: that litmus paper was not delicate enough to detect small quantities of acids in alcohol.

INDICATORS.	Number of c.c. of $\frac{N}{50}$ KOH required to produce a decided end-reaction in 25 c.c. of the following:							
	Water.	10 Per Cent. Alcohol.	25 Per Cent. Alcohol.	47 Per Cent. Alcohol.	63 Per Cent. Alcohol.	80 Per Cent. Alcohol.	94·5 Per Cent. Alcohol.	Absolute Alcohol.
Brazil wood	0·1	0·1	0·1	0·1	0·15	0·1	0·15	0·1
Cochineal	0·2	0·2	0·2	0·2	0·2	0·25	0·3	0·25
Hæmatoxylin	0·1	0·15	0·15	0·15	0·2	0·2	0·1	0·2
Iodo-eosin	0·3 $\frac{N}{10}$ acid.	0·2 $\frac{N}{10}$ acid.	0·2 $\frac{N}{10}$ acid.	0·4 $\frac{N}{10}$ acid.	0·3 $\frac{N}{10}$ acid.	0·4 $\frac{N}{10}$ acid.	0·3 $\frac{N}{10}$ acid.	0·3 $\frac{N}{10}$ acid.
Fluorescein	0·7	0·8	1·0	0·9	0·8	0·8	0·5	0·6
Lacmoid	0·1*	0·1	0·1	0·1	0·1	0·1	1 drop.	1 drop.
Litmus	0·1*	0·1	0·15	0·1	0·1	0·1	1 drop.	1 drop.
Methyl orange	0·3 $\frac{N}{10}$ acid.	0·3 $\frac{N}{10}$ acid.	0·2 $\frac{N}{10}$ acid.	0·3 $\frac{N}{10}$ acid.	0·4 $\frac{N}{10}$ acid.	0·6 $\frac{N}{10}$ acid.	0·8 $\frac{N}{10}$ acid.	0·8 $\frac{N}{10}$ acid.
Phenolphthalein	0·3	0·3	0·3	0·3	0·35	0·5	0·5	0·5
Rosolic acid	0·1	0·1	0·1	0·1	0·1	0·15	0·1	0·1
Tropæolin OO	0·2 $\frac{N}{10}$ acid.	0·2 $\frac{N}{10}$ acid.	0·2 $\frac{N}{10}$ acid.	0·2 $\frac{N}{10}$ acid.	0·5 $\frac{N}{10}$ acid.	0·7 $\frac{N}{10}$ acid.	0·7 $\frac{N}{10}$ acid.	0·8 $\frac{N}{10}$ acid.

* With litmus and lacmoid the solutions were all rendered blue, and changed only slightly on adding the alkaline solution. One drop of the solutions was equivalent to about one-twentieth of 1 c.c. Eight-tenths of 1 c.c. of $\frac{N}{10}$ acid under absolute alcohol may appear small to some, but when calculated to the basis of a centinormal solution it means 8 c.c.

Indicators.	Number of c.c. of $\frac{N}{50}$ KOH solution required to neutralize 10 c.c. of $\frac{N}{10}$ H_2SO_4 in 50 c.c. of the following:							
	Water.	10 Per Cent. Alcohol.	25 Per Cent. Alcohol.	47 Per Cent. Alcohol.	63 Per Cent. Alcohol.	80 Per Cent. Alcohol.	94·5 Per Cent. Alcohol.	Absolute Alcohol.
Brazil wood	50	50·1	50·2	50·2	50·2	50	49·9	49·8
Cochineal	49·96	49·8	49·8	50	49·8	49·8	49·8	49·98
Hæmatoxylin	50	50·2	50	50	50·1	50·2	50	50
Iodo-eosin	49·40	49·6	49·9	49·45	49·17	48·98	48·70	49·15
Fluorescein	50·8	51	51·6	50·65	50·9	50	50·7	50·45
Lacmoid	49·8	49·8	49·8	49·8	50	49·9	49·9	49·9
Litmus	49·40	49·46	49·41	49·15	49·5	49·15	49·2	48·75
Methyl orange	49·51	49·75	49·8	49·4	47·65	47·5	45·45	46·55
Phenolphthalein	51·1	51·2	50·8	50·8	51·5	51·2	51·4	51·05
Rosolic acid	51	50·6	50·8	50·6	50·2	50·6	50·4	50
Tropæolin OO	50·25	49·3	50·8	50	48	47·65	48	47·75

On comparing the results contained in the last two tables with those obtained by using commercial alcohol, we can plainly see that the disturbing agent is an impurity. The data obtained with pure alcohol vary so little from those obtained with pure distilled water, that the differences must be attributed to experimental errors. In the case of methyl orange and tropæolin OO the stronger alcoholic solutions do interfere with the delicacy of the end-reaction to such an extent that the results are entirely unreliable.

Eliminating the results obtained by the indicators, whose end-reactions are unsatisfactory, viz.: iodo-eosin, fluorescein, methyl orange and tropæolin OO, the average impurity indicated is equal to nearly 1·8 c.c. of fiftieth normal alkaline solution for every 50 c.c. of commercial alcohol; while the impurity found in the residues, the 4 litres of commercial alcohol, amounted to about 2 c.c. of the alkaline solution for the same quantity of commercial alcohol.

As the result of some recent investigations that Professor J. U. Lloyd and the writer are carrying on, the former made some comparative volumetric determinations in aqueous and alcoholic solutions, which, by permission, are given below:

PERCENTAGE OF ALKALOIDS IN FLUID EXTRACT OF COCA LEAVES.

INDICATORS.	Using Alcohol.	Excluding Alcohol.
Brazil wood	0·328	0·323
Cochineal	0·290	0·298
Hæmatoxylin	0·315	0·321

These results confirm the writer's observations.

A word about absolute alcohol may not be out of place. Caspari says: "The fact that absolute alcohol appears alkaline towards all of the above indicators is remarkable." The absolute alcohol prepared by the writer did not possess this remarkable alkaline reaction. The alkalinity was undoubtedly due to some impurity in the alcohol.

The above observations again emphasize the necessity of carefully investigating the purity of all the substance entering into an investigation before reliable conclusions can be drawn from the results obtained.

From the above observations it is safe to conclude that pure alcohol does not vitiate the accuracy of volumetric determinations, except in the cases of methyl orange and tropæolin OO. Iodo-eosin and fluorescein also appear to be affected, but their end-reactions are so gradual and indistinct that no importance can be attached to the variations of these indicators. Alkaloids and alkaloidal residues can, therefore, be determined with as high a degree of accuracy in alcoholic solutions as in aqueous solutions. Commercial alcohol, on the contrary, does influence delicate volumetric determinations, and it behooves the analyst to exclude this product from all such determinations as rigidly as he excludes hydrant water, if reliable results are desired.

305 CHERRY STREET, PHILADELPHIA, PA.

THE LEAVES OF DROSERA FILIFORMIS, RAF.

BY GEORGE M. BERINGER.

During a September visit to the pine barrens in the neighborhood of Egg Harbor City, N. J., in company with Mr. Benjamin Heritage, our attention was attracted by the condition of Drosera filiformis, Raf., at this season of the year. At the base of each plant was found a small globular bud, covered with a mass of pale brown

colored hairs. On closer inspection, this proved to be the small plantlet which nature had already provided for the next year. The Drosera filiformis is evidently a perennial. On dissection, the rudimentary leaves destined to form the rosette of leaves of the future plant were found closed upwards over each other into a ball and covered with the mass of hairs, presenting almost the appearance of a small bulb.

At this stage, the leaf is green in color, rather thick, lanceolate in outline, about one-third inch in length, and with the apex distinctly showing the circinate tendency, which later becomes so pronounced.

Gray's Manual states "that the leaves of Drosera filiformis are filiform and with no distinction of petiole and blade," a statement which is generally concurred in by other authors. Our observations lead us to the conclusion that the small leaf, as it appears at this stage of growth, really constitutes the blade or lamina of the sessile leaf, and that the future growth of the leaf is entirely an extension of the apex into a tendril-like prolongation, which has apparently been very generally considered as the entire leaf.

The various stages of growth were traced, and in the mature leaf of the fully developed plant this small blade still remains in size and outline the same as in the young plantlet.

That this flattened portion of the leaf was really the blade of a sessile leaf, and not a winged petiole or a phyllode, was evidenced, as it was flattened with the faces to the earth and sky, and not the edges, and the apex continues in growth without articulation or twisting. The venation likewise indicates that it is a lamina. This observation would seem to be an additional confirmation of the more modern classification of the Sundews, as Sarraceniales with Sarraceniaceæ and Nepenthaceæ, and the leaf character of this plant would indicate a near relationship to Nepenthes.

In the Sarracenia the enlarged petiole is really a phyllode, being flattened and hollowed out, forming the pitcher, and the lamina is reduced to the small lid-like projection at the apex of the leaf. In Nepenthes the flattened blade is present, and the apex of the leaf develops into a long tendril, on the termination of which is formed the cup or pitcher. In Drosera filiformis the small, flattened blade is present, and the apex is developed into a filiform, tendril-like elongation, but no cup is formed.

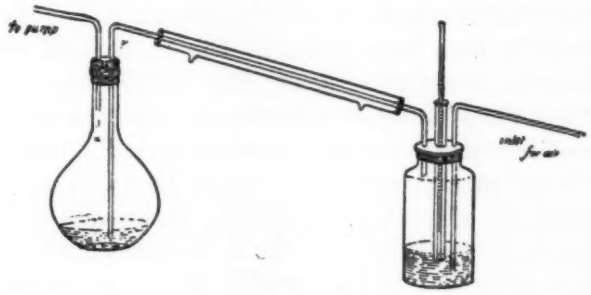
On the other hand, intermediate stages between Drosera filiformis and Dionæa are seen in D. intermedia and D. rotundifolia. In these we have the petioles distinct, but in Dionæa it is modified into a phyllode.

A SIMPLE METHOD FOR OBTAINING A LOW TEMPERATURE.[1]

By C. Edward Sage, F.C.S.

Having frequent necessity to observe the behavior of oils and fatty acids at a low temperature, I have been led to construct a simple piece of apparatus, which enables one to reduce the temperature of a sample in a very short space of time.

I venture to bring it before your notice, because I believe its use to be capable of extension to many purposes, and a short description will suffice to explain its construction.



A 6-ounce, wide-mouthed flask or bottle is fitted with a good cork, which is to be pierced with three holes, one of which is to be large enough to admit a test-tube; the other two are for the admission of two glass tubes. The inlet tube passes to the bottom of the flask, and the exit one passes only a short distance through the cork. The flask is partially filled with ether, and the sample to be examined is placed in the test-tube together with a thermometer. Air is now forced into the flask by the inlet tube and made to bubble through the ether, whereby it exposes a large surface for evaporation, and, as this takes place very rapidly, the latent heat absorbed soon reduces the temperature of the sample. Instead of forcing air

[1] Read before the Chemists' Assistants' Association (London) and taken from the *Pharmaceutical Journal*, November 7, 1896.

through the inlet tube, the exit may be attached to a Sprengel pump and the air sucked through. To prevent the waste of ether as far as possible, it is preferable to attach the exit tube to a condenser through which water is running, and to wash the air sucked through by means of cold water in a wash-bottle; this water will, on subsequent warming, yield a small quantity of ether, but the larger proportion is kept back by the condenser.

I have had several of these freezing-bottles in use during the past summer, and found no difficulty in maintaining a temperature of —4° to —5° C. for a long period, even during the hottest weather, and if the test-tubes were filled with water, it was converted into ice in a few minutes, with the expenditure of very little ether.

TABLET MEDICATION.[1]

(For remarks concerning this article, see page 688.)

The "tablet fad," as some of our pharmaceutic friends choose to call it, appears to have come to stay. The convenience, cleanliness and presumably accurate dosage of the preparations recommend them readily to the practitioner, and at the present time there is hardly a doctor's office where the familiar glass-stoppered bottles and labels of the different manufacturers are not to be encountered. They have undoubtedly affected the druggist's business to some extent, and have perhaps also modified medical practice—how materially is a question to be settled in the future. That they are the unmitigated evil that some pharmaceutic writers hold, is doubtful; but that their extensive adoption as a mode of drug-dispensing by physicians has in it possibilities to be deprecated, is pretty nearly certain. In their present development, it may easily happen that with some they may induce an indolent or careless therapeutic method, that ready-made shot-gun prescriptions may become popular and an actual evil. It is easy also to see how, without any standard authority regulating these preparations, there may be some among them that are not only useless, but absolutely dangerous combinations introduced to manufacturers, and sent out among the profession. It may be there are none as yet of this kind that are really of any importance, but we have to reckon with their

[1] From *The Journal of the American Medical Association*, October 31, 1896.

possibility. Certainly there are some among them that are ineffective or uncertain.

All the objections to these tablets could, it would seem, be avoided if there were a standard list, made up mainly of simple drugs, a few well-tried or rational combinations, perhaps, included, which could be prescribed, if so desied, and supplied by every druggist, and which could be combined according to the needs of any special prescription if the physician desired to dispense his own medicine. A very large proportion of the Pharmacopœia is made up of substances that can very readily be made up into these tablets, the convenience of which is now being daily demonstrated. Others that are not thus suitable, but which are now included in the manufacturers' lists, would of course be omitted from the standard list, and it would in this way save both physician and patient from being misled into trouble and expense. The addition of a class of compressed tablets and tablet triturates to the regular Pharmacopœia would not hurt any business more than is being done at present, and would regulate what is at present a somewhat irregular but widespread and popular method of medication, and one that has its real advantages and merits.

ON AROMADENDRIN OR AROMADENDRIC ACID FROM THE TURBID GROUP OF EUCALYPTUS KINOS.

By Henry G. Smith.

Read before the Royal Society of New South Wales, August 5, 1896, and communicated by the author.

At the general meeting of this Society, held on June 5th of last year, a paper[1] was read by the author in conjunction with Mr. J. H. Maiden, in which was described the new organic substance "Eudesmin," found by us existing in the kino of *Eucalyptus hemiphloia*, which body (together with another new organic substance existing in the same kino, provisionally named by us Aromadendrin) caused the turbidity of this Eucalyptus kino when dissolved in hot water and allowed to cool. We then promised to make a further communication to the Society when the chemistry of this other body

[1] A contribution to the Chemistry of Australian Myrtaceous Kinos. *Journal Royal Society of New South Wales*, 1895, Vol. XXIX, p. 30; also Am. Jour. Pharm., 1895, p. 575.

(Aromadendrin) should have been worked out. Through the transference of Mr. Maiden to the Directorship of the Botanic Gardens, the work of continuing this research has devolved upon me. It is with pleasure that I am enabled to lay before the Society the results of my investigation in this direction.

Some short time since, the Bureau of Agriculture for Western Australia forwarded to the Technological Museum a sample of the kino of the red gum, *Eucalyptus calophylla*, R. Br., and in investigating this kino, which belongs to the turbid group of Eucalyptus kinos, it was found that the turbidity was caused by the second body found in the kino of *Eucalyptus hemiphloia* and named *Aromadendrin*. It was also found that "eudesmin" was entirely absent. This was a most gratifying discovery, as it has enabled me to make this investigation upon a pure substance, free from "eudesmin," the presence of which in a kino makes it exceedingly difficult to obtain *Aromadendrin* sufficiently pure for research purposes, at all events with our present known methods of separation. Whether its insolubility in chloroform can be utilized to separate it successfully from "eudesmin," which body is readily soluble in that liquid, is a matter for further investigation.

METHOD OF PREPARATION.

The fine powder of this kino was treated with a small quantity of water and placed in separator for the attempted determination of "eudesmin," as fully described under that substance, in the paper already referred to. The ether was more reddish-brown than was the case with the kino of *E. hemiphloia*, and, when distilled to dryness, did not deposit tufts of crystals, as was the case in that of the latter kino under the same condition. When tested for the characteristic color reactions of "eudesmin," it was found that that body was absent, and that apparently the whole consisted of *Aromadendrin*, giving the same color reactions as that body before described. The residue, after the ether had been distilled off, was more difficult to crystallize out than "eudesmin," the solution requiring to be cooled considerably before it could be obtained in any quantity, and it also required to stand some hours when only the smallest possible quantity or absolute alcohol had been used for solution. When these crystals are filtered off, they cannot be washed with rectified spirit, as they are readily soluble in that liquid, but may be washed

once with absolute alcohol, or dried as much as possible on a porous slab, recrystallized from boiling absolute alcohol, dried again on the slab, and then crystallized twice from boiling water. When the substance is dissolved in boiling water, it becomes a jelly-like mass on cooling, the fine acicular crystals holding the water mechanically. The water is filtered off as much as possible, and the crystalline mass placed on a porous slab to dry. When thus prepared, the substance is quite white, and has the appearance of paper pulp, the interlaced hair-like crystals giving it a peculiar matted appearance, having a silky lustre, and totally distinct in physical appearance from "eudesmin." When these two bodies are prepared under like conditions they are both white, but "eudesmin" has the appearance of small scales, and separates in particles, while *Aromadendrin* has the appearance of flakes of matted material. This difference in appearance is very marked.

COLOR REACTIONS, ETC., OF AROMADENDRIN.

When the dry substance is treated with concentrated sulphuric acid, the solution becomes of a fine yellow color, which fades and darkens on standing some time, thus differing entirely in this reaction from "eudesmin," which gives a purple color under like conditions.

With nitric acid it gives a fine crimson color, thus differing from "eudesmin," which gives a yellow color with this reagent. Potash gives a fine yellow color.

When dissolved in the smallest quantity of glacial acetic acid, and water added, nothing is precipitated, but, after some time, hair-like tufts of radiating crystals form. This is also a characteristic reaction differing from "eudesmin;" because, when "eudesmin" is dissolved in the smallest quantity of glacial acetic acid and water added, the first drop causes turbidity; if, now, enough water be added to cause the whole to remain turbid, beautiful crystals soon form, the turbidity disappearing and the whole becomes crystallized. This is an easy method whereby to obtain "eudesmin" crystallized in well-shaped and fair-sized crystals.

The melting point of *Aromadendrin* was found to be 216° C. (uncorrected) on the surface of mercury; the previous melting point was evidently taken on impure material, and not free from "eudesmin." Chloroform does not dissolve *Aromadendrin*, but it readily dissolves "eudesmin."

If these reactions are tabulated, the differences are brought out more distinctly.

	Eudesmin.	Aromadendrin.
H_2SO_4 (Concentrated)	Dissolves dark, after a short time becomes purple on edges, and after half an hour beautiful purple liquid.	Dissolves yellow, becomes dark and fades on long standing. On heating becomes orange.
HNO_3 (Fuming and ordinary)	Dissolves yellow, after some time dendritic forms appear and continue to increase, being yellow in color.	Dissolves with a fine crimson color. (This reaction diminishes the value of this test for ellagic acid.)
KHO	Little change.	Dissolves a fine yellow color, which remains persistent.
Glacial acetic acid	Dissolves; on addition of small quantity of water becomes turbid, crystals soon form, turbidity is removed and the whole becomes crystallized.	Dissolves; on addition of water does not become turbid, even when more than an equal quantity of water has been added. Hair-like tufts of crystals form on standing.
Melting point	99° C. on the surface of mercury. The same in water in fine tube sealed at end.	216° C. (uncorrected) on the surface of mercury. Closed tube determination not satisfactory.
Heated between watch glasses	Melts at a low temperature to a clear liquid, and on continued heating chars but slightly, a whitish resinous mass being left.	Melts at high temperature and commences to darken at once, very quickly beginning to char.
Chloroform	Readily soluble.	Almost insoluble.
Chemical formula	$C_{26}H_{30}O_8$.	$C_{29}H_{26}O_{12}$ when heated to 120° C., or $C_{29}H_{26}O_{12} + 3H_2O$ when only air-dried.

It may be well to direct attention to the danger of a mixed compound when preparing these substances. The plates of the second body mentioned in the former paper evidently consisted of such, and contained enough "eudesmin" to alter the melting point, as they gave a melting point of 162° C. Later, a purer product of *Aromadendrin* was obtained from the kino of *E. hemiphloia*, which melted at 192° C., while the melting point of pure *Aromadendrin* is 216° C.

Aromadendrin is readily soluble in ether, acetic ether, rectified spirit and amyl alcohol; but is almost insoluble in chloroform. It is insoluble in benzole and petroleum spirit. When dissolved in those solutions mentioned, the crystals left on evaporation all tend to form acicular radiating tufts; this is so when slowly crystallized from water, alcohol, dilute acetic acid, ether and acetic ether, and it appears difficult to obtain crystals of fair size from any solution. The first crystals obtained from the solution in absolute alcohol, although impure, appear to be of larger size than by any other method.

Aromadendrin also gives the following reactions, the cold aqueous solution of the substance being taken for the determinations, except as otherwise mentioned. The small amount of the substance in solution is not sufficient to redden litmus, although a stronger solution in hot water does so readily. With solution of acetate of lead a yellow-colored precipitate is formed; in a stronger solution in hot water a dense precipitate forms of a yellow-chrome color, becoming ochre-yellow on drying.

With solution of sulphate or acetate of copper a light greenish precipitate is formed; this is much more copious in a strong, hot solution of the substance.

Acetate of zinc or acetate of cobalt both fail to form a precipitate, the salts being soluble.

Gold chloride gives a purple color, the dilute solution of gold being readily reduced.

Silver nitrate gives no precipitate, but is reduced; this very readily takes place in a hot, strong solution of the substance, a bright silver mirror being formed.

Ammonio-nitrate of silver is readily reduced.

Fehling's solution is also reduced on heating.

Gelatine gives no precipitate.

All alkaline solutions give a yellow to orange color, ranging from the light yellow given by lime-water to the orange color given by ammonia.

Ferric chloride gives a purplish-brown color in all solutions, however dilute; there is not the slightest indication of a green color, and it does not readily form a precipitate.

Ferric acetate gives a lighter purplish-brown and forms a precipitate.

Ferric chloride, added to a portion of the dry substance, gives a purplish-brown color. With "eudesmin" this reagent only stains the crystals slightly yellow.

COMPOSITION OF AROMADENDRIN.

Combustion was made of the substance after repeated crystallization from alcohol and water; it was perfectly white, had the characteristic felted appearance of this substance when crystallized from hot water; it gave the characteristic color reactions perfectly, and melted on the surface of mercury at 216° C. The portion taken for combustion was previously heated in air bath at 120° C., as the whole of the water is given off at that temperature, no further loss being experienced when melted. It was extremely light, the quantity taken filling the platinum boat.

No. 1:

·1550 gramme gave ·348 gramme CO_2,
and ·0648 gramme H_2O.
Equal to 61·233 per cent. carbon.
4·645 " hydrogen.
34·122 " oxygen.

No. 2:

·1324 gramme gave ·2982 gramme CO_2.
and ·0550 gramme H_2O.
Equal to 61·4252 per cent. carbon.
4·6156 " hydrogen.
33·9592 " oxygen.

Mean of the two combustions:

61·3291 carbon.
4·6303 hydrogen.
34·0406 oxygen.

From which we may deduce the formula:

$C_{29}H_{26}O_{12}$.

Theory requires for this formula:

61·484 carbon.
4·593 hydrogen.
33·923 oxygen.

This agrees very well with the percentage amounts obtained by experiment.

Combustion made on material before heating to 120° C. was not satisfactory, the results of three combustions not being sufficiently constant. It was found that 8·86 per cent. of water was removed by heating from 120° to 130° C. in air oven, while by heating in water bath until constant 6·1 per cent. was removed. Taking the formula as given above, it is seen that it requires 3 molecules of water to equal 8·71 per cent., so that *Aromadendrin* crystallizes with 3 molecules of water; two of these molecules are removed at or below 100° C., while the other is removed between that temperature and 120° C.; the formula for this body is, before heating, therefore, $C_{29}H_{26}O_{12} + 3H_2O$. The removal of these molecules of water does not form colored anhydrides when not heated beyond 120° C., the substance remaining quite white. When heated to melting, kino-yellow is formed.

SOLUBILITY OF AROMADENDRIN IN COLD WATER.

A portion of the purified substance was dissolved in warm water and allowed to cool to 15·5° C., when the greater portion of the substance had crystallized out. This was filtered off, and a portion of the filtrate evaporated to dryness; it was found that the residue equalled ·036 per cent. only, soluble in cold water at the temperature given, or that it required 2,777 parts of cold water of that temperature to dissolve 1 part of *Aromadendrin.*

Several attempts were made to form salts, but owing to their instability, the results were not very satisfactory. The lead precipitate obtained by adding lead acetate to a hot, strong solution appeared the most satisfactory. The lead precipitate thus obtained left 45 per cent. of PbO on ignition; this corresponds to half the molecule, or the precipitate obtained 2 atoms of lead in the molecule.

Although somewhat resembling catechin in many respects, such as melting point, not precipitating gelatine, reduction of gold and silver salts, its apparent action like an acid (although but slightly acid to litmus), its reaction with acetate of lead, etc., its slight solu-

bility in cold water, its crystallizing in needles with water, and a few other reactions—yet, it differs from catechin in its composition, its reaction with ferric chloride, its not forming pyrocatechin on heating in glycerol from 220° to 230° C. for half an hour, its different reactions with potash solution and sulphuric acid, and its not imparting brown tints to cotton cloth when boiled with solutions of sulphate of copper and potassium bichromate, it having very little dyeing properties.

We must admit the family likeness, however, and if we consider the composition of the members of the catechin group, and the relations of the catechin tannins, we cannot but recognize the probability that eventually some connection will be found to exist between *Aromadendrin* and the tannins of the turbid group of Eucalyptus kinos.

The reactions of the products obtained by fusing *Aromadendrin* with caustic potash indicate that both phloroglucol and protocatechuic acid are formed.

Kinoin, from Malabar kino, is a body also allied in some respects to catechin, and in some of its reactions to *Aromadendrin*.

When *Aromadendrin* has been heated in glycerol, the ether removes a yellow, resinous-looking body, which is almost insoluble in cold water, but instantly soluble in alcohol, forming a yellow solution of great staining power; dyeing the skin, wool, etc., a bright yellow. This is an alteration product that may be considered as *kino-yellow*, and is worthy of further investigation. Kino-yellow is also obtained when *Aromadendrin* is heated above its melting-point.

Aromadendrin is almost tasteless, being perhaps slightly sweetish. It has no odor.

Although the term aromadendric acid has been used for this substance, it should only be so considered in the sense already adopted for catechuic acid, as the acid qualities of the former are but slightly greater than are those of the latter; but it may eventually be proved to form one of a series of the tannic acids of the Eucalypts, and may probably be a starting-point for those as yet but little investigated bodies.

The ready isolation and determination of these two bodies, eudesmin and *Aromadendrin*, will assist in the elucidation of many problems connected with the large group of Eucalyptus kinos, known as the "turbid group," and will enable it to be broken down on a

purely scientific basis—a result long hoped for. Much work will require to be done before an authentic scheme can be laid down; but from our present knowledge I look forward to an easy, accurate and scientific method of arranging the members of this large group in their proper classes, and to eventually settle chemically the affinities existing between the Eucalypts, and thus help to bridge over the difficulties which have up to the present existed in reference to the members of this important genus.

We require now a method whereby these bodies can be correctly separated, both from each other and from the tannin of the kino; and until this mode of procedure is worked out it is of little use attempting a gravimetric determination of the original kinos.

NOTES ON PYROXYLIN, B. P.

Chas. T. Tyrer (*Pharm. Journ.*, 1896, p. 109) has confirmed the fact that, in the manufacture of pyroxylin, the presence of moisture in the cotton, variation in temperature of the mixed acids, time of exposure to the action of the mixed acids, and method of washing, all have an effect on the finished product. It was found that the formula of the U. S. P. gave a better product than that of the B. P., that of the latter being of inferior solubility when the yield approached theory. The best drying temperature was found to be 32° C.

THE COLORING MATTER OF SICILIAN SUMACH (RHUS CORIARIÆ).

Perkin and Allen (*Proc. Chem. Society*, 1896, p. 157) have investigated the coloring matter of Sicilian sumach (Rhus coriariæ). Löwe (*Zeit. anal. Chem.*, **12**, 127), who examined the different varieties of sumach, stated that they contain quercetin and quercitrin, but the authors are of opinion that this is incorrect as regards Sicilian sumach.

The coloring matter, $C_{15}H_{10}O_8$, forms glistening yellow needles, having dyeing properties similar to those of quercetin and fisetin, but is distinguished from these by its color reactions with dilute alkalies. The sulphuric acid compound, $C_{15}H_{10}O_8H_2SO_4$, forms orange-red needles, and the acetyl derivative, $C_{15}H_4O_8(C_2H_3O)_6$, colorless needles, melting point 203–204°. Fused with alkali it yields phloroglucol and gallic acid. These reactions show it to be identical with myricetin, the coloring matter of Myrica nagi. Sicilian sumach also contains some quantity of free gallic acid.

EDITORIAL.

TABLET MEDICATION.

On page 678 of this issue, we print an editorial which appeared in the official *Journal of the American Medical Association*, for October 31, 1896. This article, coming from the source it does, may be accepted as expressing the views of at least some American medical men on the subject of tablet medication. It defends the use of the tablet by physicians as a convenient form of medication, and declares that the tablet is not a passing fad.

There has been a great deal written during the past few years about the tablet, and one of the prominent objections to it by its opponents is the injury to the business of the pharmacist. Much as we feel for the pharmacist, we must admit that this is one of the poorest arguments against the tablet which has been put forth. If this form of medication is a real advancement in the administration of medicine, then no consideration for any class of people will long be considered. It would be just as unreasonable as the cry of the horse dealer against the trolley car, or the opposition of the gas manufacturer to the electrician.

We do not admit that this form of medication is an improvement. Experience with a few simple tablets has shown them to be thoroughly unreliable. Experiments on five samples of commercial compressed tablets and tablet triturates, which, when dissolved in water, should have yielded official lime water, showed that none of them would furnish a lime water of the official strength; the strongest one barely showed half strength; two yielded a lime water of about one-third strength; one was one-tenth strength; and one, when dissolved in water, did not impart an alkaline reaction to litmus paper. Any one can verify this statement by consulting this JOURNAL, 1895, p. 564. The samples were all from well-known manufacturers. If such is the result with a simple substance like lime water, what are we to expect from a tablet purporting to contain iron albuminate, or another containing nine tinctures? We cannot prove them to be inert as easily as we can show the absence of alkalinity in lime water, but any intelligent being, knowing the inferiority in the one case, can draw but one conclusion concerning the others.

There is another phase of the tablet question which physicians themselves should see before it is too late, and that is the encouragement which, with its aid, the manufacturer holds out to the quack. The tablet may be a boon to the lazy physician, but it is a boom for the quack. The latter, with a manufacturer's price-list, which designates the diseases that certain tablets are supposed to fit, together with the mode of administration and dose, is in a position to quiet his conscience with the belief that he will do no harm if he is not able to do any good.

Then that important part of the community, which physicians are wont to style laymen, is becoming more educated every day, and the price-lists of the manufacturer are frequently allowed to fall into the hands of this class. The result is self-medication. This stage of the tablet fad has already arrived, and we may soon expect to see physicians denouncing tablets as insoluble, unreliable and made up of incompatibles.

A quarter of a century ago we had the sugar-coated pill fad; then we had the elixir craze; the gelatin-coated pill followed, and now we have the tablet, which

is giving way to synthetic remedies, which may be administered in any of the forms. In all these methods of medication the manufacturer has done the head work; the physician has, in modern parlance, done little more than press the button, unless he has a head of his own and employs his own methods of prescribing. With each craze the public learns a little more of self-medication. If anybody suffers more than the regular physician who, by encouraging the various fads, plays into the hands of the public and the quacks, we fail to see it.

REFORM SPELLING OF CHEMICAL TERMS.

The editor of the *Chemical News*, for October 23, 1896, incidentally refers to this subject, and suggests, concerning the growing American custom of omitting the final e from the halogens and their binary compounds, that we might go a step further and use the terms fluor, chlor, brom, etc. This, he says, would bring us into harmony with Continental usage, to which we may add—and satisfy a longing possessed by many Americans for things "made in Germany." The moral we wish to draw is, that when reform in spelling once starts there seems to be no convenient stopping-place. If chlorin, why not chlor? If phosphor, why not fosfor? We are aware that this subject has been considerably agitated during the past half-dozen years, and many converts to the reform system have been made, but all do not carry the change to the same point. A reform botanical nomenclature has recently been adopted by a large number of writers on that science, but many others adhere to the old system, the result just at present is chaos, but we look and hope for dawn at no very distant date.

A PATENTED CHEMICAL ELEMENT.

In the last number of this JOURNAL we very briefly announced that the discovery of a new element was claimed by one Barrière, of France, which he had named lucium. It now appears that this element and its application to incandescent gas lighting have been patented. The patentee claims that lucium exists in monazite sand to the extent of 1·80 per cent. Evidently, Berzelius, Davy, and others, who gave their discoveries to the world, were not alive to their opportunities.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

THE TIMBER PINES OF THE SOUTHERN UNITED STATES. By Charles Mohr, Ph.D. Together with a discussion of the structure of their wood, by Filibert Roth. Prepared under the direction of B. E. Fernow, Chief of the Division of Forestry. Bulletin No. 13. Washington. 1896.

The Southern pines and their products have always been an interesting study to the botanist and chemist. In the monograph under consideration we have many questions concerning this interesting group of forest trees ably answered. Dr. Mohr, by his special attainments and long residence in the pine district, has been able to collect much valuable information, and it is now presented in a way to be of lasting value.

The work is a quarto volume of 160 pages, judiciously illustrated with twenty-seven excellent plates and a number of figures.

The introduction by Mr. Fernow treats of forestry in general, and its applica-

tion in the case of the five species of pine under consideration. The body of the book is made up of a complete description of the five most important Southern pines, namely, Pinus palustris, heterophylla, echinata, tæda and glabra. Pinus palustris is treated under the following headings: Geographical Distribution, Products and Uses, Botanical Description, Description of Wood, Progress of Development, Conditions of Development, Forest Management, and an appendix devoted to the Naval Store Industry. The other pines are described in about the same manner, with the appendix on naval stores, which answers for all.

The notes on the structure of the wood of these pines, by Mr. Roth, is a valuable addition. This portion is fully illustrated with microscopical drawings of typical wood sections.

While that portion of the work which refers to the naval stores industry will be of greatest interest to the pharmacist, still the whole book can be read with profit.

YEAR-BOOK OF PHARMACY, comprising abstracts of papers relating to pharmacy, materia medica and chemistry, contributed to British and foreign journals, from July 1, 1895, to June 30, 1896, with the transactions of the British Pharmaceutical Conference at the Thirty-third Annual Meeting, held at Liverpool, July, 1896. London: J. and A. Churchill. 1896.

Although some forty pages less in size than its immediate predecessor, yet this volume is no less interesting and instructive. It contains the usual well-chosen abstracts, thirty-two pages of notes and formulas and the original papers presented at the annual meeting; most of the latter were published in abstract in the September number of this JOURNAL.

FACTS AND SUGGESTIONS REGARDING THE PINELLAS PENINSULA, FLORIDA. The F. A. Davis Company. Philadelphia. 1896.

This pamphlet is a handsomely illustrated description of the Tampa Bay district, on the western coast of Florida. The illustrations are reproductions from photographs, and, therefore, give an unvarnished representation of the locality, which is noted as a resort for invalids, as well as for its productiveness in the direction of fruits and vegetables.

FACTS ABOUT MILK. By R. A. Pearson, B.S. U. S. Department of Agriculture, Farmers' Bulletin, No. 42. Washington. 1896.

ON TETRAMETAPHOSPHIMIC ACID. By H. N. Stokes.
Reprint from *Am. Chem. Journal*, November, 1896.

COMMERCIAL FERTILIZERS AND CHEMICALS inspected, analyzed and admitted for sale in the State of Georgia up to September 1, 1896. Under the supervision of Hon. R. L. Nesbitt, Commissioner of Agriculture, of the State of Georgia; George F. Payne, State Chemist; Geo. W. Harrison, State Printer. Atlanta, Ga. 1896.

PROCEEDINGS OF THE CONNECTICUT PHARMACEUTICAL ASSOCIATION, at the Twentieth Annual Meeting, held in Bridgeport, Conn., February 4 and 5, 1896.

PROCEEDINGS KENTUCKY PHARMACEUTICAL ASSOCIATION. 1896.

MINUTES OF THE PHARMACEUTICAL MEETING.

PHILADELPHIA, November 18, 1896.

The second regular Pharmaceutical Meeting, of the series of 1896–97, was held in the Museum of the College, with Joseph W. England in the chair.

The reading of the minutes of the previous meeting was omitted, and they were allowed to stand as published.

"Edible and Non-Edible Mushrooms and Fungi" was the subject of a communication by Charles McIlvaine, of Haddonfield, N. J. The author described quite a number of the plants belonging to the group of fungi, and stated that by study of their botanical characters and experiments with reference to their edible qualities, he had increased the list so that the edible fungi numbered 437 varieties.

The genus Amanita was distinguished for having among its members eight species, which were the only toadstools fatal to man, while the remaining members of the group were regarded as among the finest of the edible varieties. Atropine, heroically administered, has been proved to be an antidote in amanitine poisoning. In reply to some inquiries, Mr. McIlvaine gave suggestions for raising mushrooms in cellars, and also stated that their high percentage of nitrogen rendered them nutritious as food, and that ofttimes they were relished by invalids when other kinds of food were refused. Some water-color drawings of the plants were shown for illustration.

Lyman F. Kebler presented a paper, the subject of which was: "Is Alcohol a Source of Error in Volumetric Analysis?" About a year and a half ago the author noticed the effect which alcohol seemed to produce on indicators in volumetric work. Subsequently he experimented with various samples of commercial alcohol, and it was observed that they all exercised an influence on the indicators used. Then a series of carefully conducted experiment were carried out, to determine whether pure alcohol really did modify the results in volumetric work, and to what extent the influence was exercised. The author considered the results so obtained, and stated in conclusion that alkaloids and alkaloidal residues could be determined with as high a degree of accuracy in alcoholic as in aqueous solutions, but that commercial alcohol did influence delicate volumetric determinations.

"The Leaf of Drosera Filiformis" was the subject of a note by Geo. M. Beringer. The writer's observations of the characters of the leaf of Drosera filiformis, at different stages of its development, confirmed the modern classification of Sundews with Sarraciniaceæ and Nepenthaceæ. The paper was accompanied by herbarium specimens, and in this connection Mr. Beringer exhibited a specimen of Rhexia aristosa, Britton, which was collected at Egg Harbor City, N. J. He remarked in reference to the rarity of the plant in this locality, and called attention to the tuberous form of the underground portion from which the plant was developed.

Thomas S. Wiegand read a note on "A Convenient Drying Box." The apparatus consisted of a well-made wooden box lined with paper and having a lid provided with hooks of such construction that the closer they were pressed to their supporting pins, the tighter they drew the lid down. A tray for holding quicklime (which was the desiccating agent) was placed on the bottom of the box. At convenient distances apart wire frames were arranged

for supporting the substances to be dried. The box has been found useful in a number of cases where it was not convenient to use the ordinary desiccator.

"Glycerite of Licorice" was the subject of the last contribution, which was presented by Joseph W. England.

Powdered extract of licorice was sifted upon water and ammonia water, in certain proportions contained in a capacious agate-ware pan, dissolved, and the mixture poured upon a sand bed in a glass funnel, allowed to stand twelve hours and percolated, and more water added until the soluble matter was washed out, the percolates mixed and the volume in fluid ounces noted. One fluid ounce was evaporated to a constant weight, and the number of grains of extract in the reserve percolate calculated and divided by 240 to obtain the number of fluid ounces of a 50 per cent. by volume solution that could be made. The remainder was then evaporated to three-fourths of the estimated volume, and sufficient glycerin added to make up the volume. Samples of the glycerite, which were made a couple of months ago by the author had kept well and were quite agreeable in flavor and odor. The preparation was suggested for making syrup extemporaneously, using 1 part of glycerite to 3 parts of simple syrup.

Prof. F. G. Ryan called attention to a set of "Sterling Graduates," which had been presented by Neidlinger Brothers, of New York City.

On motion, the meeting adjourned.

T. S. WIEGAND,
Registrar.

NOTES AND NEWS.

The Determination of Caffeine in Tea is accomplished by E. H. Gane (*Jour. Soc. Chem. Ind.*, February, 1896), according to the following process, which is practically that suggested by Allen: "6 grammes of finely-powdered tea are boiled with 500 c.c. of water, using a reflux condenser, for six hours. The decoction is filtered, and the filtrate made up to 600 c.c. Heat to boiling and add 4 grammes of lead acetate. Attach to a reflux condenser and boil ten minutes. Filter; take 500 c.c. and evaporate to about 50 c.c. Remove the excess of lead by means of sodium phosphate, and finally concentrate to about 40 c.c. The caffeine is then removed by shaking four to five times with chloroform. Four portions are absolutely necessary to ensure complete extraction, and it is advisable to use a fifth."

The following yields were obtained by this process:

	Per Cent. of Caffeine.
(1) Black tea dust	2·56
(2) Black whole tea, Japan	2·89
(3) Black Amoy, whole leaf	3·14
(4) Green dust	2·56
(5) Black Congou, whole leaf	3·36
(6) Green Hyson, whole leaf	2·10
(7) Green sweepings	1·70
(8) Black Assam	3·36
(9) Green dust	2·22
(10) Assam, whole leaf	4·01
(11) Ceylon, whole leaf	4·12
(12) Black dust, Japan	1·96

INDEX

TO VOLUME 68 OF THE AMERICAN JOURNAL OF PHARMACY.

Abies balsamea, Link., general characters, chemical composition, etc. . . 554
description and species 23
Fraseri, Lindley, description and composition 559
general characters of genus 554
Nordmanniana, Spach., distribution, structure and composition . . 562
Webbiana, Lindley, description and composition 565
Abietineæ, the, characteristics of 23
Acetanilid in synthetical remedies (*Moerk*) 389
Acetone and acetone-chloroform (*Squibb*) 144
patent on manufacture of 52
Acid, aristidinic, constituent of Aristolochia argentina 141
aristinic, constituent of Aristolochia argentina 141
aristolic, character of 141
aromadendric (see aromadendrin) 679
ellagic, presence of, in Quebracho Colorado 626
glacial acetic, test for gurjun balsam (*Kebler*) 143, 168
glycerophosphoric and glycerophosphates 455
hydrobromic, concentrated 501
hypophosphorous, note on 501
oxalic, preservative for color of dried plants (*Schroeder*) 132, 168
phosphoric, determination of 523
toxicodendric, origin of 19
Acids contained in plants, identification of (*Lindol*) 439
Acidum lycopersicum, doubtful existence of 576
sulphurosum, decrease in strength of 299
Aconite roots, distinction of 191, 223
Aconitine, action of methyl alcohol on 573
Aconitum heterophyllum, alkaloid of 573
Acorns, examination of (*Trimble*) 601, 634
Alcohol as a source of error in titration 520
in titration of alkaloids (*Caspari*) 473
in volumetric analysis (*Kebler*) 667, 691
physiological effects of 533
Alcoholic liquors, sale of (*Miller*) 433
Alexander, Charles E. Potassium bromide with caffeine 425
Algæ and fungi, preserving media for 399
Alkali and bleaching powder, production of 457
Alkaloids, alcohol in titration of (*Caspari*) 473
Alpers, Wm. C. Gelatin capsules 481
Aluminum drinking vessels 188
Amanitine poisoning, antidote to 652
American Pharmaceutical Association 343, 460, 495, 505
price of proceedings 350
pharmacopœias and dispensatories (*Lloyd*) 637
Ammonium chloride, estimation of, in tablets 608
Ampelopsis quinquefolia, Mich., substitute for Rhus toxicodendron . . . 131
Anæsthesia, jubilee of 628
Anthemis nobilis, peculiar growth of 191, 223

Antimonial compounds, disuse of 634
Antimonii oxidum and pulvis antimonialis (*La Wall*) 597, 633
Antitoxin, double, Gibier's 163
Antitoxins, Sir Joseph Lister on 612
Apocynum androsæmifolium, substitution of 193, 223
Apprentices, preliminary education of 406
Aqua ammoniæ fortior, strength of 300
ammoniæ, strength of 301
Araucaria species, classification of 23
Araucarieæ, the characteristics of 23
Aristolin, principle found in Aristolochia argentina 141
Aristolochia argentina (*Hesse*) 140
Aristolochine, alkaloid found in Aristolochia argentina 141
Aromadendrin, chemistry of (*Smith*) 679
Asparagin, presence in Polygala senega 183
Asparagine in the nutrition of plants (*Kinoshila*) 39
Asparagus, peculiar specimen of 348
Assay methods for cinchona bark (*Kebler*) 79, 119
Atisine, properties and derivatives of 573
Atlanta Exposition, souvenir of Jury of Awards 635
Atropine as an antidote in amanitine poisoning 652
Attfield, John. Resignation of 408
work of 464

Bael, Indian, and its preparations 504
Balance, a suspension 52
Balsam, gurjun, test for (*Kebler*) 143, 168
Barium in hydrobromic acid 438
Basham's mixture, neutral 224
Bastin, Edson S. An instructive floral monstrosity 430
Are they Rœntgen rays? 142
and *H. Trimble.* North American Coniferæ 21, 65, 136, 199, 242, 321, 383, 409, 554, 642
Beech nuts, analysis of 16
sample of 51
tree, American, description of 11
Beeswax, pure, scarcity of 532
Belladonna root powder 502
Beringer, George M. Botany and materia medica 210, 396
Leaves of Drosera filiformis, Raf. 675, 691
Rhus poisoning 18, 51
Bird, F. C. J. The properties and uses of formaldehyde 617
Bismuth subnitrate, basic character of 163
chemical composition of (*Kebler*) 422
Blood root, spurious (*Holmes*) 552
Boards of pharmacy, certificates of 406
suggestions to 525
Borax, native, sample of 51
Borneol from synthetic pinene 522
Botanic gardens of the world 464
Botanical contributions 211
excursion to Mexico (*Harshberger*) 588, 634
notes (*Lowe*) 191, 223
Botanist, an eminent, death of 629
Botany and Materia Medica (*Beringer*) 210, 396
British Pharmaceutical Conference 190, 498
Business hours for the pharmacist 405

Cacao beans, Mexican, sample of 635
Cactaceæ, North American 400

Caffeine, determination of, in tea 570, 692
with potassium bromide (*Alexander*) 425
Calcium borate, native, sample of 51
in plants, function of 453
tartrate, presence in "Myristica kino" 549
Calx chlorata, strength of 303
sulphurata, quality of 303
Camphor leaf oil (*Hooper*) 261
Ngai, production of 214
price of 53
tree, cultivation of 261
Canada thistle, chemical analysis of (*Pierce*) 529
Cannabis indica, active principles of 112
Capsules, correction in reference to 575
gelatine (*Alpers*) 481, 519
Carbonic acid gas 404
Carborundum, samples of 50
Carotin, chemical properties of 185
Carleighe, Michael. Recognition of services of 393
Carter, William S., and *H. C. Wood.* Preparations of strophanthus . . 353
Carvacrol, estimation of 542
Cascara sagrada, bitterless (*Gilpin*) 135, 168
Cascarillin, formula of 501
Caspari, Chas., Jr. Alcohol in titration of alkaloids 473
Castanopsis species, samples of bark 634
Cedrus, description and species 24
Celastrus scandens, aril of (*Keller*) 183
Cephæline, specific properties 352
Cetine, melting point of 8
Chamælirin, action of 553
Chamælirium Carolinianum, Willd., admixture of 552
Chemical terms, spelling of 689
Chemists' Exhibition, the 400
exposure of 612
Cherry bark, wild, valuation of 522
Chestnut leaves, powdered, detection of, in senna powder 587
Chicago College of Pharmacy 295
Chlorophyll and starch, formation of 296
Chloroplasts, occurrence of 184
Chromatophores, classification of 183
Chromoplasts, origin of 184
Cicuta maculata, volatile oil of (*Stroup*) 236
Cinchona bark, assay of (*Kebler*) 79, 119
Citro-phosphate of sodium (*Wescott*) 256, 272
Cnicus arvensis, alkaloidal principle of 531
Coca, assay of fluid extract of 609
Coffee, inferior quality of fluid extracts of 536
Collie, J. Norman Appointment of 464
Color of dried plants, preservation of (*Schroeder*) 132, 168
Condenser, Liebig's, inventor of 224
Coniferæ, North American (*Bastin* and *Trimble*) . . 21, 65, 136, 199, 242, 321, 383, 409, 554, 642
Conium maculatum, pharmacy of 499
Contributions to pharmacy, recent 452, 566
Copper, detection of, in vegetable substances 568
Correspondence 575
Cotton seed, yield of oil 43
Coulter, J. M. Appointment of 294
Cownley, A. J., and *B. H. Paul.* Jaborandi and its alkaloids 445
Cupressineæ, description of 25
Cypripedium, poisonous influence of 218

Dammara species, classification of 23
DeGraffe, Bertha L. Opuntia vulgaris, Mill. 169, 223
Tannins of some ericaceæ 313, 350
Dextrin, presence of, in honey 570
Diacetylnepalin, preparation of 444
Diacetylnepodin, formation of 445
Dietetics, modern 576
used in medicine and pharmacy 522
Dispensatories, American 641
Dohme, Alfred R. L., and *H. Engelhardt.* Observations on kola nuts . 5, 51
Dover's powder, history of (*Thompson*) 337, 348
Drink plants of the Indians (*Havard*) 265
Drosera filiformis, Raf., leaves of (*Beringer*) 675, 691
Drummer, the, value of 404
Drying box, a convenient (*Wiegand*) 666, 691
Dunstan, Wyndham R. Appointment of 294

Eberhardt, E. G. Powdered gamboge 371
Editorial 45, 114, 164, 220, 269, 341, 401, 457, 495, 576, 627, 688
Elder roots, specimen of 51
Elm bark, adulteration of 195, 223
Emanuel, Louis. Malt extracts 387
Emetine, specific properties 352
Emodin, constituent of Polygonum cuspidatum 161
monomethyl ether, occurrence of 162
Engelhardt, Hermann, and *A. R. L. Dohme.* Observations on kola nuts 5, 51
England, Joseph W. Glycerite of licorice 663, 692
Ericaceæ, some, tannins of (*DeGraffe*) 313, 350
Eucalyptus calophylla, R. Br., kino of 680
hemiphloia, kino of 679
rostrata, product of 167
species, samples of kino 634
Examination, sample, for the State Board of Pharmacy 525
Examinations, comparative exhibit of 524
State Board of Pharmacy 524
Explanation, an 629
Extracts, fluid, Lloyd's standardizing method for 535
malt, examination of samples (*Emanuel*) 387
solid, official, percentage of alkaloid 368

Fats, anhydrous, samples of 168
Fennel, Japanese, and its oil 500
Filter folder, French 224
Fisetin, occurrence in Quebracho Colorado 626
Fish sounds, samples of 348
Floral monstrosity, an instructive (*Bastin*) 430
Flückiger's reaction for carvacrol 543
Food adulteration 576
Formaldehyde as an antiseptic 503
properties and uses of (*Bird*) 617
French, Howard B., donation of 165

Gamboge, powdered (*Eberhardt*) 371
Gas, carbonic acid, a preservative for fruit 534
Gilpin, Henry B. Bitterless cascara sagrada 135, 168
Ginger, analytical characters of 504
Gladstone, Mr., interview with 584
Glucinum, properties of 52
Glycerite of licorice (*England*) 663, 692
Goose-fat, composition of 636

"Graduates, Sterling," a set of 692
Guarana, percentage of caffeine in fluid extracts of 536
solvent for 51

Hahn, John H. Sumbul 395
Harshberger, John W. A botanical excursion to Mexico 588, 634
Haussmann, Frederick W. Character of the urine 84, 119
Sugar reactions 358
Havard, V. Drink plants of the Indians 265
Hemm, Francis. Election of 352
Herbarium, an, making of (*Lowe*) 379
specimens, exhibition of 634
Hesse, O. Aristolochia argentina 140
Rumex nepalensis, Wall 441
History of the Pharmaceutical Meetings (*Wiegand*) 605, 633
Hoffman's anodyne, demand for 405
Holmes, E. M. A spurious Maranham jaborandi 449
Spurious blood root 552
Honey, chemistry of 570
poisonous 519
Hooper, David. Camphor leaf oil 261
Cultivation of jalap tubers 537
Horse-meat, detection of 177
Hydrometers, presentation of 50

Ince, Joseph. Resignation of 494
Index Kewensis, value and scope of 210
Indian hemp, chemistry of 112
Pharmacologist, the 494
Indicators, care in the use of 575
in the titration of alkaloids 513
Intoxicating liquors, sale of, by druggists 526
Investigation and research, results of 533
Iodide of starch in surgery 607
Iodine, tincture of, examination of 610
Ionone, synthetic 404
Ipecac root, alkaloidal value of samples of 196, 223
Ipecacuanha, Brazilian and Columbian 352
Iron, reduced, chemical examination of 197, 223

Jaborandi and its alkaloids (*Paul* and *Cownley*) 445
leaves of commerce 215
Maranham, spurious (*Holmes*) 449
Jalap tubers, growth of (*Hooper*) 537
Jurisprudence, pharmaceutical 527

Kebler, Lyman F. Alcohol in volumetric analysis 667, 691
Assay of cinchona bark 79, 119
Chemical composition of bismuth sub-nitrate 422
Laboratory notes 193, 223
Opium assaying 257, 272
Spermaceti 7, 51
Test for gurjun balsam 143, 168
Kekule, Friedrich August. Decease of 464
Keller, Ida A. Aril of Celastrus scandens 183
Kilmer, Fred. B. Kola and kolanin 96, 118
Kino in species from Myristica (*Schaer*) 546
samples of 224
Kinoin, principle found in Malabar kino 686

Kinoshita, Y. Nutrition of plants 39
Kino-yellow, preparation of 686
Kola and kolanin (*Kilmer*) 96, 118
caffeine in preparations of 537
caffeine compound in 517
nuts, menstruum for (*Schroeder*) 254, 272
observations on (*Dohme* and *Engelhardt*) 5, 51
Kolanin, history and preparation of 101, 118
Kolazym, properties and action 104
Kremers, Edward and *Wm. R. Schumann.* Oil from Monarda punctata, L. 469
and *E. J. Melzner.* Oil of Monarda fistulosa, L. 539

Laboratory notes (*Kebler*) 193, 223
Lactylamido salol, use of 53
Lantern slides, exhibition of 350
Lard, anhydrous, manufacture of 168
Larix, characters of genus, species 24
Larrea tridentata, sample of exudation 348
Lavoisier monument, the 578
La Wall, Chas. H. Antimonii oxidum and pulvis antimonialis . . . 597, 633
Assay for sanguinaria 305, 349
A thermometric stirring rod 260, 273
Beechnut oil 11, 51
Shaddock and forbidden fruit 121, 167
Standardization of solid extracts 366
Laws, pharmacy 526
regulating the character of foods and drugs 341
Lead subacetate, solution of (*Post*) 427
Ledger, Charles, and introduction of cinchona 120
Legislation, pharmaceutical, uniformity of 526
Leucoplasts, origin of 183
Lewis, Arthur R. Cottonseed oil 42
License law, high 406
Licorice, glycerite of (*England*) 663, 691
roots, examination of 636
seeds, samples of 224
Lindot, L. Identification of organic acids contained in plants 439
Liniment of soft soap (*Smith*) 187
Liquor auri et arsenii bromatus 504
ferri subsulphatis, U.S.P., test for 302
tersulphatis, U.S.P., test for 302
plumbi subacetatis, deterioration of 299
sodæ chloratæ, deterioration of 298
Lister, Sir Joseph, on antitoxins 612
Lithium bitartrate in the treatment of Rigg's disease 295
bromide, efficacy in gout 295
Lloyd, John Uri. American pharmacopœias and dispensatories 637
Distilled water 1, 50, 187, 224
Pharmacopœial standard 297, 349
Rhamnus purshiana 467
Lowe, Clement B. Botanical notes 191, 223
Making of an herbarium 379
Lucium, patent on use of 689
supposed new element 592

McDonald, Alexander. The poppy and opium in Persia 435
McIlvaine, Charles. Edible and non-edible mushrooms and fungi . . 648, 691
Magnolia stems, markings on 191, 223
Maiden, J. H. Appointment of 464, 635
Malt extracts (*Emanuel*) 387

Markoe, Geo. F. H. A memoir (*Scoville*) 593
Medicinal compounds, influence of, upon character of urine (*Haussmann*) 84, 119
Medicines, patent 404, 405
"Melachol," composition of 256
Melzner, E. J., and *Edward Kremers.* Oil of Monarda fistulosa, L. . . . 539
Menthol group, the 521
Mescal buttons, alkaloids of 566
Mesquite tree, samples of gum 348
Methyl benzaconine, formation and properties of 573
Metric system in the United States 165, 220, 269
of weights and measures 577
Metz, A. L. Election of 386
Mexican flora, classification of (*Harshberger*) 588, 634
Microscope, the, uses of, in pharmacy 405
Microtœna cymosa, Prain., description of 397
Milk, condensed 503
Miller, J. A. The sale of alcoholic liquors 433
Mistura ferri composita, process for 295
Moerk, Frank X. Acetanilid in synthetical remedies 389
Color tests with synthetic remedies 394
Monarda fistulosa, L., composition of oil (*Melzner* and *Kremers*) 539
punctata, L., composition of oil (*Schumann* and *Kremers*) 469
Monotropa hypopitys, glucoside of 454
Morison, J. L. D. Substitution for Rhus toxicodendron 131
Morphine in toxicological cases (*Nagelvoort*) 374
Mucilages, composition of (*Yoshimura*) 111
Mushrooms and fungi (*McIlvaine*) 648, 691
Myrica nagi, coloring matter of bark 572
Myricetin, coloring principle of Myrica nagi 572
Myristica species, kino of (*Schaer*) 546

Nagelvoort, J. B. Morphine in toxicological cases 374
Nepalin, chemical properties of 443
Nepodin, chemical properties of 444
Neroli, synthetic 404
Notes and news 294, 352, 584, 636, 692
Nux vomica, assay of (*Smith*) 189
assay of tincture of 609

Obituary—*Coffee, Isaac N.* . . 584 *England, Robert* 293
Curtman, Chas. O. . . 293, 351 *Markoe, George. F. H.* . . . 584
Oil, beechnut (*La Wall*) 11, 51
beechnut, sample of 51
camphor leaf (*Hooper*) 261
Cicuta maculata (*Stroup*) 236
cottonseed (*Lewis*) 42
note on 503
linseed, destructive distillation of (*Sadtler*) 465, 519
of cassia, determination of purity of 194
dilem, source of 396
Japanese fennel 500
Monarda fistulosa, L. (*Melzner* and *Kremers*) 539
Monarda punctata, L. (*Schumann* and *Kremers*) 469
Oils of peppermint, effects of climate and soil 502
orange and lemon, preservation of 405
synthetic 404
Oleomargarine, use of 577
Opium assaying (*Kebler*) 257, 272
Chinese 504
denarcotized, samples of 119

Opium, tincture of, preparation of 406
Opuntia fulgida, sample of exudation 348
vulgaris, Mill (*DeGraffe*) 169, 223
Analysis of fruit 172

Palmettos of the United States 397
Palmityl phytostearin, an ester obtained from Aristolochia argentina . . 141
Pamphlets, objectionable in compressed herbs 224
Papain as a digestive agent 295
Paregoric, preparation of 405
Pareira brava, section of 635
Paul, B. H., and *A. J. Cownley.* Jaborandi and its alkaloids 445
Pennsylvania Pharmaceutical Examining Board 45, 342
Pepper tree, growth in California 215
Perkin, A. G. Root of Polygonum cuspidatum 160
Pharmaceutical meetings, history of (*Wiegand*) 605, 633
Pharmacist, the, position of, among scientific workers 512
Pharmacognosy, pronunciation of 503
Pharmacopœia Mexicana, copy of 635
Pharmacopœial requirements 223
standard (*Lloyd*) 257, 349
Pharmacopœias, American 638
Pharmacy, eminence in 405
laws, oddities in 526
Phenacetine, illegal sale of 224
Philadelphia College of Pharmacy:
Alumni Association 288
Books presented to the library 50, 165, 167, 635
Classes of 1895-96 . . . . . 54, 59
Commencement 282
Examinations 273, 274
Graduates 282
Minutes of meeting 119, 290, 463, 635
Officers and trustees elected 292, 635
Pharmaceutical meetings 50, 118, 167, 223, 272, 348, 633, 691
Seventy-fifth anniversary 220, 269, 292
Specimens presented 50, 118, 167, 224, 348, 634, 692
Phosphate production, competition in 219
Phosphatic manures, effect of, on jalap tubers (*Hooper*) 537
Picea alba, Link., structure, composition and economic uses 385, 409
description and species 23
excelsa, Link., structure, composition and economical uses 418
nigra, Link., structure, composition, etc. 410
pungens, Engelmann, distribution, structure, composition, etc. . . . 414
Pierce, Herman J. Chemical analysis of Canada thistle 529
Pinaster, description of 25
Pinoideæ, number of species 22
Pinus Austriaca, Höss, structure, composition, etc. 70
cubensis, Griesbach, description of 207
description and species 24
echinata, Miller, general characters, etc. 199
excelsa, Wall., chemical analysis of 38
glabra, Walter, characters, occurrence, etc. 325
longifolia, Roxb., history, description, etc. 139
mitis, Michaux. (See Pinus echinata, Miller) 199
Montana, DuRoi, characters and structure 327
palustris, Miller, characters, composition, etc. 74, 136
resinosa, Aiton, characters, structure, etc. 321
rigida, Miller, structure, composition, etc. 65
strobus, L., structure, composition, etc. 28

Pinus sylvestris, Linné, characters, occurrence, etc. 333
tæda, Linné, general description of 203
Virginiana, Miller, characters, structure, etc. 330
Pipette, safety 501
Platinum-bearing ores, deposits of 340
Pogostemon patchouli, Pell., habitat of 396
Poisoning of plants 218
Polygala senega, analysis of (*Schroeder*) 178, 223
Polygonin, glucoside found in Polygonum cuspidatum 162
Polygonum cuspidatum, root of (*Perkin*) 160
species, products of 160
Poppy and opium in Persia (*McDonald*) 435
Post, Edward M. Solution of lead sub-acetate 427
Potash, caustic, per cent. KOH 303
Potashes, Canadian 519
Potassa sulphurata, note on 503
Potassium bromide with caffeine (*Alexander*) 425
iodide, examination of samples of 197
sulphate as a diluent for Dover's powder 349
Powder, Dover's, history of (*Thompson*) 337, 348
Powders, colors of 232
microscopic examination of 228
Practice *vs.* theory 526
Prescribing by pharmacists 404, 405
Prescribing by pharmacists (*Thomas*) 431
Presidential addresses, notable 627
Products of the U. S. Pharmacopœia 522
Prollius' assay method, application of 81
Pseudotsuga, characteristics and species 24
Pyroxylon, B. P., notes on 503

Quebracho Colorado, coloring matter of 626
sample of wood 635
Quercetin in the skins of the bulb of onion 568
Quercus species, samples of bark 634
Quinine, production of, in Java 120

Radiography, uses of, in pharmacy 501
Rattlesnake root from senock 611
Recurrent topics, *résumé* of (*Thompson*) 532, 610
Rennet, essence of 504
Requirement of candidates for registration 526
Resins, physiology of 137
Retort for generation of oxygen 348
REVIEWS.—Albany College of Pharmacy. Annual Catalogue, 1896–7 . . 460
Albany Medical College, catalogue and announcement 583
Annales de Chimie Analytique 347
Antitoxins, vaccine virus and other biological products 117
Antitoxins 221
Arny, Henry V. Ueber einige neue Abkömmlinge des Terpineols . 458
Atkinson, Edward. Cooking in the Aladdin oven 220
The science of nutrition 220
Baltimore College of Dental Surgery, fifty-seventh annual catalogue of 583
Barnouvin, Henri. Organismes des Hydrolats et des Solutes . . . 459
Bauer, F. E., und *A. Hilger.* Beiträge zur chemischen Kenntniss der Pfefferfrucht 347
Bocquillon-Limousin, H. Formulaire des Médicaments Nouveaux pour 1896 166
Bourquelot, Émile. Les Ferments Solubles (Diastases—Enzymes) . 497

REVIEWS.—*Bracken, H. M.* Outlines of materia medica and pharmacology 48
Britton, Nathaniel Lord, and *Addison Brown.* An illustrated flora of the Northern United States, Canada and the British Possessions, 630
Brooklyn College of Pharmacy, sixth annual announcement 583
Brown, Addison, and *Nathaniel Lord Britton.* An illustrated flora of the Northern United States, Canada and the British Possessions, 630
Buffalo College of Pharmacy, eleventh annual announcement of . . . 584
Bulletin of the New York Botanical Garden, Vol. I, No. 1 403
California College of Pharmacy, prospectus of the twenty-fourth annual session of 222
Central Tennessee College. Meharry Medical, Dental and Pharmaceutical Departments 583
Chicago College of Pharmacy. The School of Pharmacy of the University of Illinois 497
Coblentz, Virgil. Handbook of pharmacy 46
The newer remedies 403
College of Pharmacy of the City of New York, prospectus for 1896–7, 497
Collin, E., et *G. Planchon.* Les Drogues Simples d'Origine Végétales 46
Comey, Arthur Messinger. A dictionary of chemical solubilities, inorganic 346
Commercial fertilizers and chemicals 690
Complete catalogue of the products of the laboratories of Parke, Davis & Co. 348
Contributions of the U. S. National Herbarium, Vol. III, No. 9 . . . 497
Coulter, John M. Contributions from the U. S. National Herbarium, Vol. III, No. 7 348
Cownley, A. J., and *B. H. Paul.* Brazilian and Columbian ipecacuanha 347
Culbreth, David, M. R. A manual of materia medica and pharmacology 631
Delépine, Stephane M. Sur une Methode de Separation des Methylamines par l'aldehyde-formique 459
Department of Agriculture, Central Experimental Farm. Flax. Bulletin No. 25 582
Discovery of oxygen and its immediate results, including the overthrow of the phlogiston theory 117
Dudley, Wm. L. The relationship of the heat of vaporization of gases to their density and also to their boiling point 222
Dijes, A. Ueber Reindarstellung der Gährungsmilchsäure . . . 272
Ebert, Albert E., and *A. Emil Hiss.* The Standard Formulary . . . 580
Edel, Frank. How to make tablets 272
Edson, Cyrus. Aseptolin 402
Elliot, D. G. On sundry collections of mammals 460
Engle, H. M. Nut culture. U. S. Department of Agriculture. Circular No. 1 583
Experiment Station Record. Vol. 7, No. 9. U. S. Department of Agriculture 583
Facts and suggestions regarding the Pinellas Peninsula, Florida . . . 690
Fayn, Et. Essai des Médicaments Nouveaux 632
Fernow, B. E. Facts and figures regarding our forest resources briefly stated 272
Forest fire legislation in the United States 271
Forestry for farmers 117
Flintermann, R. F., and *A. B. Prescott.* Dipyridine trimethylene dibromide and a study of certain additive reactions of organic bases 167
Forbes, Robert H. Canaigre 581
Hansen, Emil Chr. Practical studies in fermentation 166

REVIEWS.—*Harrop, Herbert B.*, and *Louis Wallis.* The Iconoclast . . 222
Harshberger, J. W. The purposes of ethno-botany 271
Heckel, Edouard. Annales de L'Institute Colonial de Marseille . . . 221
Hesse, O. Notiz über die Wurzel von Rumex Nepalensis, Wall. 271, 403
Zur Geschichte des Proteacins 271
Zur Kenntniss des Hyoscins 584
Zur Prüfung des Chininsulfats 271
Ueber Scopolamin und Atroscin 584
Hilger, A., und *F. E. Bauer.* Beiträge zur chemischen Kenntniss der Pfefferfrucht 347
Hiss, A. Emil, and *Albert E. Ebert.* The Standard Formulary . . 580
Index catalogue of the Library of the Surgeon-General's Office, U. S. Army 583
Index to the annual reports of the U. S. Department of Agriculture 403
Jeliffe, Smith Ely, and *H. H. Rusby.* Essentials of vegetable pharmacognosy 115
Keil, George. Keil's medical, pharmaceutical and dental register-directory 459
Khouri, Joseph. Contribution a l'Étude du Psidium Pomiferum, L. . 117
Kloecker, A. Archiv for Pharmaci og Chemi 347
Kort over Denmark's Apotheker 347
Lasher, George F. Lasher's directory of the wholesale grocers and canners and packers of the United States and Canada 459
Léger, E. Les Alcaloides des Quinquinas 496
List of publications of the U. S. Department of Agriculture . . . 222, 348
Lloyd, J. U. A study in pharmacy 116
Etidorhpa, or the end of earth 165
Loew, Oscar. The energy of living protoplasm 582
Ueber Einige Japanische Nahrungsmittel 221, 459
Louisville College of Pharmacy, twenty-sixth annual announcement of, 583
Lutz, Gotthilf. Die oblito-schizogenen Secretbehälter der Myrtaceen, 271
Luz, H. Ueber das Ammoniacum 271
MacMillan, Conway. Minnesota botanical studies 49, 348
Maiden, J. H. Notes on the commercial timbers of New South Wales, 49
Some New South Wales plants worth cultivating for shade, ornamental and other purposes 583
The chemistry of the Australian indigenous vegetation 221
and *H. G. Smith.* Contributions to a knowledge of Australian vegetable exudations, No. I 222
On a natural deposit of aluminum succinate in the timber of Grevillea robusta, R. Br. 222
Preliminary notes on the bark of Carissa ovata, R. Br., var. Stolonifera, Bail 221
Maisch, Henry C. C. Compounds which complicate the estimation of sugar in urine 583
Massachusetts College of Pharmacy, thirtieth annual catalogue . . . 460
Melckebeke van, Raymond. Nouveau Procédè pour la Préparation de Grands Exemplaires de Cristaux 117
Merck, E. Annual report on the year 1895 271
Merck's 1896 index 222
Millspaugh, C. F. Contribution to the flora of Yucatan 48
and *Lawrence William Nuttall.* Flora of West Virginia 459
Mjöen, Dr. Beiträge zur mikroskopischen Kenntniss des Opiums . 271
Mohr, Charles. The timber pines of the Southern United States . . 689
Montreal College of Pharmacy, twenty-ninth annual announcement of 584
Morrison, J. E. The Pharmacal Gazette 222
Mueller, von Ferd. Select Extra-Tropical Plants 166
and *Ralph Tate.* Botany (Phanerogams and Vascular Cryptogams) 632

REVIEWS.—*Murillo, Adolfo.* De la Eclampsia en la Maternidad de Santiago y en Especial de la Eclampsia Tardia 403
National College of Pharmacy, twenty-fifth annual circular of 497
National Formulary of Unofficial Preparations, the 270
Northwestern School of Pharmacy. Circular of Information for 1896–97 460
Novy, Frederick G and *Victor C. Vaughan.* Ptomaïns, leucomaïns, toxins and antitoxins 581
Nueva Farmacopea Mexicana de la Sociedad Farmacéutico de Mexico. Tercera Edicion 629
Nuttall, Lawrence W., and *Charles F. Millspaugh.* Flora of West Virginia 459
Oldberg, Oscar. A course of home study for pharmacists 345
Ontario College of Pharmacy, annual announcement of 460
Palmer, T. S. The Jack Rabbits of the United States 272
Paul, B. H., and *A. J. Cownley.* Brazilian and Columbian Ipecacuanha 347
Pearson, R. A. Facts about milk 690
Pennsylvania Hospital, Report of Board of Managers, 1896 583
Physicians' Visiting List for 1896, the 50
Planchon, G., et *E. Collin.* Les Drogues Simples d'Origine Végétales 46
Prescott, Albert B. Notes on a few Pyridine Alkyl Iodides, ... 167
and *R. F. Flintermann.* Dipyridine trimethyline dibromide, and a study of certain additive reactions of organic bases . . . 167
Price list of Sharp & Dohme 403
Proceedings of the American Pharmaceutical Association 344
Connecticut Pharmaceutical Association 690
Illinois Pharmaceutical Association 222
Kentucky Pharmaceutical Association 49, 690
Pennsylvania Pharmaceutical Association, 1896 632
Tennessee State Druggists' Association, 1896 632
Thirteenth Annual Convention of the National Confectioners' Association of the United States 633
Virginia Pharmaceutical Association 49
Report of the work of the Agricultural Experiment Stations of the University of California for 1894–95 633
Robertson, Charles. Transactions of the Academy of Science of St. Louis 459
Roques, Ferdinand. Recherches sur la Cinchonicine 345
Rusby, Henry H., and *S. E. Jelliffe.* Essentials of vegetable pharmacognosy 115
St. Louis Chronicle's, the, photographic views of the great cyclone at St. Louis 460
St. Louis College of Pharmacy, annual announcement for 1896–97 . . 584
Saunders, William. Experimental farms 584
Schaffer, Nathan C. The common school laws of Pennsylvania . . . 222
Schär, Ed. Ueber die Anwendungen der Guajakharz-Lösung (Guajaktinctur) als Reagens 347
Schleich, C. L. Notes on local anæsthesia by infiltration 49
Scio College, department of pharmacy, annual announcement for 1896–97 497
Scoville, Wilbur L. The art of compounding 46
Seaman, Wm. H. Constants of the elements and table of chemical classification 167
On the relations of chemistry to education 117
Semi-annual report of Schimmel & Co. 49, 347
Seventeenth semi-annual dividend meeting of the employees of the Procter & Gamble Company 272
Shimoyama, Y. Mittheilungen aus dem Pharmaceutischen Institut der Kaiserlich-Japanischen Universität zu Tokio, Japan 403

REVIEWS.—*Shoemaker, John V.* A practical treatise on materia medica and therapeutics . . . 47
Siboni, G. Soluzione Ferruginosa Arsenicale . . . 222
Smith, H. G., and *J. H. Maiden.* Contributions to a knowledge of Australian vegetable exudations, No. 1 . . . 222
On a natural deposit of aluminum succinate in the timber of Grevillea robusta, R. Br. . . . 222
Preliminary notes on the bark of Carissa ovata, R. Br., var. Stolonifera, Bail. . . . 221
Smithsonian contributions to knowledge, No. 989, Washington, 1895 . 117
Southworth, Thomas. Annual report of the Clerk of Forestry for the Province of Ontario . . . 497
Souvenir of the twenty-sixth annual meeting of the National Eclectic Medical Association . . . 348
Stewart, F. E. A compend of pharmacy . . . 49
The eminently scientific nature of our patent and copyright laws . 583
Stokes, H. N. On trimetaphosphimic acid and its decomposition products . . . 633
Swingle, Walter T., and *Herbert J. Webber.* The principal diseases of citrous fruits in Florida . . . 460
Sztankay, J. M. V. Ueber eine eigenthümliche neue Magnesium-Verbindung . . . 348
Ueber eine neue Bildungsart des Magnesium Nitrides (Stickstoff-Magnesium) . . . 348
Technology Quarterly, and Proceedings of the Society of Arts . . . 346
Texture of some important soil formations. U. S. Department of Agriculture. Bulletin No. 5 . . . 583
Trelease, William. Missouri Botanical Garden . . . 401
Tschirch, A. Untersuchung über die Blattfarbstoffe und die Beziehungen des Chlorophylls zum Blutfarbstoff . . . 271
Untersuchungen über die Sekrete . . . 271
Was ist eigentlich Pharmacognosie? . . . 271
Tucker, Willis G. State control in medicine . . . 117
University of Michigan, annual announcement and register of alumni of the school of pharmacy . . . 583
University of Pennsylvania, catalogue of . . . 460
University of Washington, catalogue and announcements . . . 583
University of Wisconsin, catalogue for 1895–6 . . . 497
Vaughan, Victor C., and *Frederick G. Novy.* Ptomaïns, leucomaïns, toxins and antitoxins . . . 581
Vierteljahresschrift über die Fortschritte auf dem Gebiete der Chemie der Nahrungs- und Genussmittel. 1895 . . . 117, 346
Virchow, Hans. Ueber Bau und Nervatur der Blattzähne und Blattspitzen, mit Rücksicht auf diagnostische Zwecke im Gebiete der Pharmacognosie . . . 271
Wallis, Louis, and *H. B. Harrop.* The Iconoclast . . . 222
Webber, Herbert J., and *Walter T. Swingle.* The principal diseases of citrous fruits in Florida . . . 460
Wiley, Harvey W. The principles and practice of agricultural analysis . . . 116
Wright, John S. Botanical products of the U. S. Pharmacopœia, 1890, . 222
Year-book of pharmacy, 1895 and 1896 . . . 48, 690
Year-book of the U. S. Department of Agriculture . . . 458
Rhamnus purshiana (*Lloyd*) . . . 467, 521
Rhus coriariæ, coloring matter of . . . 687
Michauxii, poisonous properties of . . . 19
poisoning (*Beringer*) . . . 18, 51
toxicodendron, substitution for (*Morison*) . . . 131
Roentgen rays (*Bastin*) . . . 142
Roentgen's rays . . . 164
Rubber industry in Lagos . . . 212

Rubber, softening of 404
Rumex nepalensis, Wall. (*Hesse*) 441
Rumicin, chemical properties of 442

Sabal palmetto, technical uses 397
Sadtler, Samuel P. Destructive distillation of linseed oil 465
Saffron, adulteration of 198, 223
Sage, C. Edward. Method for obtaining a low temperature 677
"Sal americ," sample of 119
Sanguinaria, assay of (*La Wall*) 305, 349
Sayre, L. E. How to distinguish the viburnum barks 225
Senna 585
Schaer, Edward. Kino in species from myristica 546
Scheele and his discoveries 405
Scheelite, sample of 224
Schinus molle. (See pepper tree) 215
Schroeder, J. Henry. Analysis of Polygala senega 178, 223
Menstruum for fresh kola nuts 254, 272
Preserving the color of dried plants 132, 168
Schuler process for collection of resin 249
Schumann, Wm. R., and *Edward Kremers.* Oil from Monarda punctata, L. 469
Scientific American, the, anniversary of 464
Scoville, Wilbur L. Memoir of Prof. Geo. F. H. Markoe 593
Senega, adulteration of 398
Senna (*Sayre*) 585
Serenoa serrulata, description of 397
Serum, anti-diphtheritic, dry, sample of 50
Antitoxin, composition of 505
Shaddock and forbidden fruit (*La Wall*) 121, 167
fruit, chemical examination of 129
Sherwin, Robert S. Compound syrup of white pine 233
Shu-Lang root, occurrence and uses 212
Smith, C. E. Assay of nux vomica 189
Liniment of soft soap 187
Smith, Henry G. Chemistry of aromadendrin 679
Soap, soft, liniment of (*Smith*) 187
Soda, caustic, per cent. NaOH 304
production of, in the United States 114
Sodium vanadate as a reagent for alkaloids 452
Soja bean, cultivation in the United States 313
literature on (*Trimble*) 309, 350
tubercles on the roots of 295
Solanum carolinense in epilepsy 268
Solidago odora, use of, for tea 553
Solids, mixtures of, for internal use 520
Spermaceti (*Kebler*) 7, 51
reliable constants of 10
Spiritus ammoniæ, decrease in strength of 300
Sponge, consumption of 610
Spruces, the, general characters of 383
Squibb, Edward R. Acetone and Acetone-chloroform 144
Squibb's process for Dover's powder 349
Staining fluid, borax-carmine 52
Standardization of solid extracts (*La Wall*) 366
Standardizing method for fluid extracts 535
Starch in gamboge, tests for 372
State Pharmaceutical Associations:
California 407
Indiana 407
Kentucky 462
Missouri 407
Pennsylvania 270, 342, 404
Meetings of 401

Stirring rod, thermometric (*La Wall*) . . . 260, 273
Strobus, characteristics of . . . 25
Strophanthin, experiments with . . . 355
Strophanthus, extract of . . . 353
preparations of (*Wood* and *Carter*) . . . 353
seeds . . . 521
Stroup, Freeman P. Volatile oil of Cicuta maculata . . . 236
Succi, strength of . . . 501
Sugar, maple, production of . . . 400
reactions (*Haussmann*) . . . 358
samples of . . . 224
Sumach, commercial varieties, exportations . . . 215
Sumbul. (*Hahn*) . . . 395
Synthetic remedies, color tests with (*Moerk*) . . . 394
Syrup, hypophosphites with iron, preparation of . . . 405
iodogallic, formulas for . . . 567
iodotannic, formulas for . . . 567
krameria, cloudiness of . . . 405
shaddock fruit . . . 130
white pine, compound (*Sherwin*) . . . 233
rock candy . . . 404, 405

Tablet-making at the dispensing counter . . . 502
Tablet medication . . . 678, 688
Tannin of some acorns (*Trimble*) . . . 601, 634
Tannins of some ericaceæ (*DeGraffe*) . . . 313, 350
the palmettos . . . 397
Taraxacin, study of . . . 518
Tar, manufacture of . . . 253
Taxaceæ, description and genera . . . 26
Taxodiniæ, description and genera . . . 25
Tea, percentage of caffeine in fluid extract of . . . 535
Temperature, low, method for (*Sage*) . . . 677
Tests for sugar (*Haussmann*) . . . 358
Theses, abstracts from . . . 608
Thomas, D. J. Prescribing by pharmacists . . . 431
Thompson, William B. A *résumé* of recurrent topics . . . 532, 610
History of Dover's powder . . . 337, 348
Tomato, the, as a food . . . 576
Trimble, Henry. Recent literature on the soja bean . . . 309, 350
The tannin of some acorns . . . 601, 634
and *E. S. Bastin.* North American coniferæ . . . 21, 65, 136, 199, 242, 321, 383, 409, 554, 642
Triosteum perfoliatum, L., an adulterant of senega . . . 398
Tsuga Canadensis, Carr, distribution and general characters . . . 642
description and species . . . 24, 642
Tuna, fruit of various opuntias . . . 177
Turpentine industry, the . . . 242

Urine, character of (*Haussmann*) . . . 84, 119

Vacation, a three months', by our General Manager . . . 190
Vaccine virus, liquid, sample of . . . 119
Vacuum pan, the, features of . . . 534
Vanilla beans, infection of . . . 406
Vermilion, preparation of . . . 636
Viburnum barks, how to distinguish (*Sayre*) . . . 225
Vinegar, white wine . . . 502

Water, distilled (*Lloyd*) 1, 50, 187, 224
keeping qualities of 1
Wescott, William C. Citro-phosphate of sodium 256, 272
Wiegand, Thomas S. A convenient drying box 666, 691
History of the pharmaceutical meetings 605, 633
Wine, grape fruit, sample of 167
of iron, bitter, formulas for 341
Wolframite, sample of 224
Wood, Horatio C., and *Wm. S. Carter.* Preparations of strophanthus . 353

Xanthin, chemical properties 186
Xanthorrhœa Preissii, sample of exudation 634

Y*oshimura, K.* Composition of mucilages 111
Yucatan, flora of 211

Zeitschrift des allgemeinen österreichen Apotheker-Vereins, anniversary of 114

ARTH.
808.

224
I
272
691
633
167
341
224
353

186
634

111
211

114

GLENN'S SULPHUR SOAP

GLENN'S SULPHUR SOAP is the *original* and *best* combination of its kind, and the one now generally in use. For sale by all druggists.

BEWARE OF COUNTERFEITS.

WHOLESALE DEPOT:

The Charles N. Crittenton Co.

115 FULTON STREET, - - NEW YORK

PURE MEXICAN VANILLA BEANS

We offer Jobbers and Manufacturers and those buying in original packages, Mexican Vanilla Beans of the best selection and curing.

THE CHARLES E. HIRES CO.

BOURSE BUILDING

PHILADELPHIA, PA.

THERE IS NO LINE OF

POWDERED DRUGS

So Complete, so Reliable, or at Such Reasonable Prices, as

OUR EXTRA SELECT POWDERS.

FAC-SIMILE OF PACKAGE

ONE POUND STRICTLY PURE
POWDERED IPECAC ROOT.
Cephaelis Ipecacuanha.
carefully selected and garbled
Racine Brettlienne.
Dose—1 to 30 grains.
Po. Ipecac. 1 part; Po. Opium, 1 part; Po. Sugar of
Dovers Powder, 180 grs.; Po. Squill, Po. Ammoniac, each
Po. Ipecac. Po. Tragacanth, each 120 grs.; Sugar,
Dose—1 to 3.
Bucklers Croup Mixture—Tartar Emetic,
minutes until it operates

OF OUR EXTRA SELECT POWDERS.

They are powdered from the choicest materials with the greatest care, labelled with the botanical, common, German and French names; also the medical properties and formulas for preparations in which the powders may be used. Are put up in sealed tin cans of one pound each, and

NEVER OBTAINABLE IN BULK.

ALLAIRE, WOODWARD & CO.

PEORIA, ILL.

BULLOCK & CRENSHAW,

WHOLESALE DRUGGISTS,

Manufacturers and Importers,

No. 528 ARCH STREET, - Philadelphia.

—OUR—

SUGAR-COATED PILLS AND GRANULES

Maintain their high reputation for Reliability, Solubility and Perfection in Finish.

LABORATORY APPARATUS and PURE CHEMICALS

Are a specialty with us. Send for our Catalogues.

Rare Chemicals and Drugs, Superior Colognes, Extracts and Sachets, Strictly Pure Powdered Drugs and Essential Oils.

ESTABLISHED 1822.

ROSENGARTEN & SONS,

Manufacturing Chemists,

PHILADELPHIA.

Sulphate of Quinine.

Muriate of Quinine.
Citrate of Iron and Quinine,
Sulphate of Cinchonine,
Sulphate of Cinchonidine,
Sulphate of Quinidine,
Bromide of Ammonium,
Bromide of Potassium,
Nitrate of Silver,
Aqua Ammonia.

Sulphate of Morphine.

Acetate of Morphine,
Muriate of Morphine.
Nitrate of Ammonia,
Hypophosphites,
Subnitrate of Bismuth,
Spirit of Nitre,
C. P. Acids,
Tannin,
Ether

And a General Assortment of Fine Chemicals.

Extract from Report of the Judges at the Exhibition of the Franklin Institute, Philadelphia, November, 1874, in regard to the Chemicals exhibited by Rosengarten & Sons:

"These gentlemen exhibit quite a list of Chemicals, and claim for them superior purity considered as commercial articles. The Committee have carefully examined a number of them and find this claim fully substantiated, some of the articles being almost absolutely Chemically Pure, and being certainly the best of the kind in the market.

"For Purity of Chemical Preparations, a Silver Medal."

F. A. GENTH, Prof. Chemistry, University Pa.
G. A. KOENIG, Prof. Chemistry, University Pa.
S. P. SADTLER, Prof. Chemistry, University Pa.
J. H. CARTER, Manufacturing Chemist.

FOUNDED A. D. 1818.

LOCAL AND LONG DISTANCE TELEPHONES.

POWERS & WEIGHTMAN,

MANUFACTURING CHEMISTS,

NEW YORK,
16 Maiden Lane.

Philadelphia,

Offer to the Wholesale Drug Trade, and to those who buy in similar quantities, a general assortment of

CHEMICALS

Medicinal, Photographic, and for the Arts.

MORPHINE--Sulphate, Muriate, Acetate, etc.

QUININE, QUINIDINE, CINCHONINE, CINCHONIDINE, in all their forms.

STRICTLY OF OUR OWN MANUFACTURE.

CALOMEL, CORROSIVE SUBLIMATE, RED AND WHITE PRECIPITATE, and other

MERCURIAL PREPARATIONS.

ACIDS--Acetic, Citric, Sulphuric, Tartaric, etc.

Strychnine. Nitrate of Silver. Chloroform.

Glycerine. Ethers. Hoffmann's Anodyne.

Water Ammonia, 16°, 20°, 26°. Blue Vitriol.

Alum. Epsom and Rochelle Salts. Seidlitz Mixture

Etc., Etc., Etc., Etc., Etc.

STEARNS' PERFUMES

QUADRUPLE STRENGTH

FRAGRANT DELICATE LASTING

SOLD TO THE DRUG TRADE ONLY.

It pays to push the best goods in the perfume line, as a trade well established by selling the finest odors only is the trade which shall be permanent and entirely satisfactory to the retailer and customer. Fine goods can only be produced by liberally using the finest materials, aided by skilled labor. We import all the French flower pomades used by us direct from Grasse, also the finest and most expensive essential oils, and we can thus guarantee the quality of the ingredients to be the best. Our bouquets are made from formulæ of established superiority and are well aged before sending out.

QUALITY.

We truly believe no line of odors made in this country has become more popular than ours have, and no department of our business has increased more rapidly than that of perfumery. We know this increase is due entirely to the fact that while our prices may be higher than some others, our quality is of one standard.

THE BEST AND THAT ONLY.

Fine Perfumes must possess three distinguishing characteristics: First, Fragrance in abundance without being loud; second, Delicacy with sweetness and freedom from sharpness; third, Permanency and lasting qualities.

SPECIAL ODORS. "4" Roses, Amorita, Rosalys, Kalanthe, Tonquin Musk, "Czarina Violettes."

REGULAR ODORS. White Rose, May Blossom, Ylang Ylang, Heliotrope, Sweet Marie, Stephanotis, Opoponax, Crab Apple Blossom, New Mown Hay, Lily of the Valley, Jockey Club, Wood Violet, White Lilac, Frangipanni, Ideal Bouquet.

Our complete Perfume Catalogue will be mailed on application.

TERMS: Three months' credit. We pay the freight, provided it does not exceed 10 per cent. of the invoice. Containers, boxing and cartage free.

FREDERICK STEARNS & CO.,

DETROIT, MICH., U.S.A.

Bottle Stoppers,

Collapsible Tubes,

Pill Machines,

Pill Compressors,

Suppository Moulds.

A. H. WIRZ,

913-915-917 Cherry Street,

PHILADELPHIA, PA.

LIQUID

RENNET.

This article coagulates Milk without previous preparation, being most convenient for making

JUNKET, OR CURDS AND WHEY

Made from Calves' Rennets by a formula that many years' experience has proved reliable, and believed to be the best and cheapest in the market. Sold by leading wholesale houses in Boston, New York, Chicago and Philadelphia, and by the manufacturer.

JAMES T. SHINN,

Apothecary,

Broad & Spruce Sts.

PHILADELPHIA.

1837. ROBERT SHOEMAKER & CO. 1896.

N. E. Corner Fourth and Race Streets,

PHILADELPHIA.

MANUFACTURERS of **Strictly Pure Powdered Drugs** and **Spices.** The best crude goods only are used, and each article, prepared in our own mills, with the most scrupulous care. Crushed, ground and finely powdered drugs to meet the requirements of the best educated, conscientious Pharmacist.

IMPORTERS of **Fine Drugs, Essential Oils, Aromatic Distilled Waters.**

NORWEGIAN COD-LIVER OIL.

OLIVE OIL, Finest quality.

CASTILE SOAP, and Italian Drugs.

ALLEN'S MEDICINAL EXTRACTS, WINES and JUICES of **Conium, Hyoscyamus,** Etc., Etc.

Sole United States Agents for **JOHNSTON'S FLUID BEEF.**

HUNTER'S SCOTCH OATMEAL.

DOCTORS LIKE

Hypodermics that dissolve quickly and perfectly, that are uniform, accurate and reliable. That explains why

OUR HYPODERMICS

are so popular. They cost no more than others —in fact *a full line* in a neat leather case lists at $14.00—less usual discount to the trade.

SHARP & DOHME,

Est. 1860,

CHICAGO. BALTIMORE. NEW YORK.

C. F. BOEHRINGER & SOEHNE,

MANUFACTURING CHEMISTS

Mannheim, Germany, and 7 Cedar St., New York.

Largest Makers in the World of

QUININE AND COCAINE.

Standard Products:

ACETANILID, ACID PYROGALLIC, ACID SALICYLIC, CAFFEINE, CHLORAL HYDRATE, CODEINE, CREOSOTE (Beechwood), ERGOTINE, EUCALYPTOL, IRON BY HYDROGEN, PARALDEHYDE, PILOCARPIN, QUININE SALTS, RESORCINE, SALICIN, SCOPOLAMIN, TERPINE HYDRATE, ETC., ETC.

ALWAYS SPECIFY — *THE HIGHEST STANDARD*

TRADE MARK B&S SCHUTZ-MARKE

WE ARE LEADERS ON EVERY PRODUCT LISTED.

LICORICE...

Rolls, Lozenges and Wafers

Powdered Extract and Powdered Root

Ammoniacal Glycyrrhizin in Scales.

THE MELLOR & RITTENHOUSE CO.

218 N. TWENTY-SECOND ST.

PHILADELPHIA.

Taka-Diastase

PRICE REDUCED TO

$1.70 per Ounce, Net.

We are now able to relieve a large number of persons suffering from **FAULTY DIGESTION OF STARCH,** and can aid our patients, during convalescence, so that they speedily regain their weight and strength by the ingestion of large quantities of the heretofore indigestible, but nevertheless very necessary, starchy foods.—*Therapeutic Gazette.*

Pepsin is of no Value In ailments arising from **Faulty Digestion of Starch.**

Write for Literature.

* * *

Parke, Davis & Co.,

Manufacturing Chemists,

DETROIT, MICHIGAN.

BRANCHES:
NEW YORK: 90 Malden Lane.
KANSAS CITY: 1008 Broadway.
BALTIMORE: 8 South Howard St.
NEW ORLEANS: Tchoupitoulas & Gravier Sts.

BRANCH LABORATORIES:
LONDON, Eng., and WALKERVILLE, Ont.

No New Store, Designed to be Modern, or Handsomely Appointed, Should be Without

ROUND SHOULDER

WARNER & CO.'S

NEWLY DESIGNED

DRUG SHOP BOTTLE

SQUARE SHOULDER

A New and Ornamental Form of Dispensing Bottle

MOUNTED ON FOOT OR BASE

It furnishes handsomely, being beautiful and symmetrical, and is a great improvement over the old-fashioned square bottom bottle, so long in use. The contrast is as marked as between an ordinary tumbler and a handsome goblet. A drug store fitted out with these bottles presents a very attractive appearance, as they are a graceful and ornamental feature. They are stronger than the ordinary bottle, as the concussion which would shiver the latter does not break off the base of the new bottle. Not one bottle of 300 in use in one store was broken in a period of three years. No one who has them in use would exchange for the old style.

The difference in height between this and the old style bottle is an economical feature, inasmuch as three lines of shelving will answer where four were formerly required, and the smaller number of bottles brings their cost to about the same as the ordinary ware.

NUMBER OF BOTTLES REQUIRED TO COVER TEN FEET OF SHELVING

Half pint, $2^{19}/_{12}$ doz. One pint, $2^{8}/_{12}$ doz. Two pint, $2^{2}/_{12}$ doz. Four pint, $1^{8}/_{12}$ doz.

Glass labels running lengthwise, with two or three lines of lettering, suitable for this style of bottle, 18 cts. each. Ordinary style of Indestructible Labels, 12 cts. each.

NOTHING CAN SURPASS THE BEAUTY OF THESE DESIGNS.

WE ALSO SUPPLY THE ORDINARY STYLE SHOP BOTTLES

Special attention given to the fitting out of New Stores.

WM. R. WARNER & CO., 1228 Market St., Philadelphia.

GLYCERINE, C. P.

MEETING ANY DEMAND AS TO PURITY, COLOR OR GRAVITY.

IMPROVED PROCESS, NEW PLANT.

CAPACITY UNEQUALLED IN AMERICA.

THE PROCTER & GAMBLE CO.

CINCINNATI, O.

SAMPLES FURNISHED ON APPLICATION.

THE

Chemical Laboratory

—OF THE—

PHILADELPHIA COLLEGE OF PHARMACY.

Winter Term, - October 1st to April 1st.

Spring Term, - - - April 1st to July 1st.

STUDENTS MAY JOIN AT ANY TIME DURING THESE TERMS.

Open daily, from 9 A. M. to 1 P. M., for individual instruction, and during the Winter Term, on Wednesday, Thursday and Friday afternoons for class instruction.

Advance students or Graduates in Pharmacy may make arrangements for remaining all day. The Laboratory is fully equipped with apparatus for all kinds of chemical investigation in proximate and ultimate analysis. Special opportunities are afforded to those engaged in plant analysis, for grinding, drying and exhausting drugs, and for recovering their solvents by distillation. Students may also pursue courses in the analysis of ores and silicates; and in the analysis of, and detection of impurities in, foods. The preparation of organic and inorganic compounds will receive a full share of attention, as well as the detection of impurities in them and in officinal compounds.

For particulars concerning terms consult the College Announcement or address the Director,

PROF. HENRY TRIMBLE,

145 N. Tenth Street, Philadelphia.

New York Quinine and Chemical Works

(LIMITED)

QUININE, ALOIN
COCAINE, CODEINE
MORPHINE, ACETANILID

And a General Assortment of Medicinal Chemicals

N Y Q

Our products are unsurpassed in quality and appearance; they are carried in stock by wholesale druggists generally, and your preference is respectfully solicited.

For information and free Handbook write to MUNN & CO., 361 BROADWAY, NEW YORK. Oldest bureau for securing patents in America. Every patent taken out by us is brought before the public by a notice given free of charge in the

Scientific American

Largest circulation of any scientific paper in the world. Splendidly illustrated. No intelligent man should be without it. Weekly, $3.00 a year; $1.50 six months. Address, MUNN & CO., PUBLISHERS, 361 Broadway, New York City.

The Tannins

By Henry Trimble, Ph.M.

Vol. I. General and Gallotannic Acids

Vol. II. Oak, Mangrove, Canaigre, Chestnut.

Price, $2.00 per Volume.

J. B. Lippincott Company,

715 MARKET STREET,

Philadelphia

THE

ALUMNI REPORT

is issued by the **Alumni Association of the Philadelphia College of Pharmacy,** in monthly numbers, nine times a year, from October to June inclusive.

Object:—To unite the members of the Alumni Association of the Philadelphia College of Pharmacy in fellowship and interests, to advance the cause of higher pharmaceutical education, and to develop the social side of the Pharmacist's character. It is not intended for members alone; subscription is open to all.

Read this:—

"The P. C. P. Alumni Report is a publication that no druggist, whether he be a graduate of the P. C. P. or not, can afford to be without."—*Drugs, Oils and Paints.*

The first number of Volume XXXIII was issued early in October.

The subscription for the nine numbers of 1896 to 1897 is one dollar.

Are you a subscriber?

If not, why not?

Send matter for publication to the Editor, JOSEPH W. ENGLAND, No. 145 North Tenth Street, and subscriptions and business matter to the Business Manager, W. NELSON STEM, No. 2000 Callowhill Street,

PHILADELPHIA, PENNA.

SUBSCRIBE

FOR THE

American Journal of Pharmacy.

A Magazine which records the opinions and researches of the foremost pharmaceutical writers of the day. Neither the pharmacist, the professor nor the college student can afford to be without it, for all the essential branches of pharmacy receive liberal attention.

TERMS: $3.00 per year.

Students of the Philadelphia College of Pharmacy may subscribe at a reduced rate. Address,

AMERICAN JOURNAL OF PHARMACY,

145 NORTH TENTH STREET,

Philadelphia.

A Text-Book of Chemistry

By Samuel P. Sadtler, Ph.D., F.C.S., and Henry Trimble, Ph.M.

A text-book and work of reference for pharmaceutical and medical students, as well as for druggists, physicians and all others interested in the chemistry of the United States Pharmacopœia.

It contains 950 pages of elaborately illustrated matter, and we have no hesitation in predicting it will become the standard work on Chemistry in America.

Price, $5.00 By Mail, Prepaid.

J. B. LIPPINCOTT COMPANY,

715 MARKET STREET,

PHILADELPHIA, PA.

The Philadelphia College of Pharmacy.

FOUNDED 1821

FACULTY.

JOSEPH P. REMINGTON, PH.M., F.C.S., Professor of Theory and Practice of Pharmacy, and Dean of the Faculty.
SAMUEL P. SADTLER, PH.D., F.C.S., Professor of Chemistry.
HENRY TRIMBLE, PH.M., Professor of Analytical Chemistry.
EDSON S. BASTIN, A.M., F.R.M.S., Professor of Materia Medica and Botany.

INSTRUCTORS.

FRANK G. RYAN, PH.G., Pharmacy.
FRANK X. MOERK, PH.G., Chemistry.
CLEMENT B. LOWE, PH.G., M.D., Materia Medica and Botany.
JOSIAH C. PEACOCK, PH.G., Analytical Chemistry.
J. LOUIS D. MORISON, PH.G., M.D., Microscopical Laboratory.

Three years of attendance at lectures and laboratory work are now required before graduation.

Those who are able to show four years' practical experience in the drug business, after having satisfactorily passed their examinations will be awarded the degree of ***Doctor in Pharmacy.***

Students who have not had store experience, but who successfully pursue the three years' course and pass their examinations, will be awarded the degree of ***Pharmaceutical Chemist.***

The ***Annual Announcement,*** giving particulars concerning these two courses, will be mailed upon application.

Address,

THOMAS S. WIEGAND, Actuary,
145 North Tenth Street,
Philadelphia.

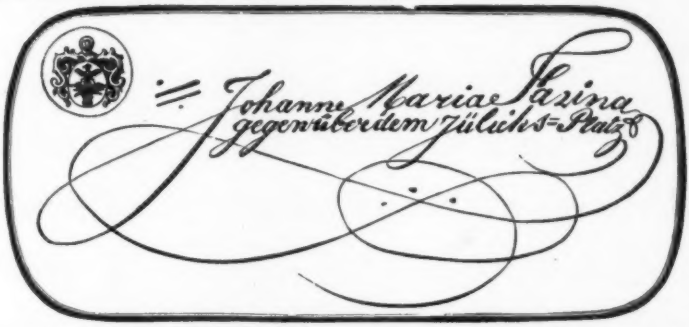
WE are pleased to announce that we have been appointed sole agents in the United States for the sale of the ORIGINAL and well-known

Eau de Cologne

Distilled by **JOHANN MARIA FARINA**

GEGENUBER DEM JULICHS PLATZ, COLOGNE, the most ancient distiller; established 1709

We beg to call attention to the following signature, which appears on each bottle or flask of this famous brand of cologne.



A complete stock of all sizes will be constantly on hand, and we shall be pleased to receive your orders.

We also call the attention of the trade to

Lycetol-Bayer Gout Water

Put up in 24-oz. bottles at $5.00 per dozen.

In view of the favorable reports concerning the action of Lycetol-Bayer in the treatment of Gout, Rheumatism, Lithæmia, Renal Calculus, etc., we have decided to offer this valuable preparation to the medical profession in form of an Alkaline Carbonated Mineral Water, put up in bottles of 24 ozs., each bottle containing 1.0 Gm. (15 grains) Lycetol.

Lycetol is the tartrate of dimethylpiperazine, and combines the powerful uric acid solvent action of the latter with that of the salt of a vegetable acid. It is extremely pleasant to the taste, well borne by the stomach, and suitable for administration in chronic cases. In the treatment of lithæmia, renal calculus, gout and chronic rheumatism, Lycetol has been found a prompt, efficient and safe solvent and eliminant of uric acid and uratic deposits.

Owing to recognized value of alkaline mineral waters in the treatment of diseases dependent upon the uric acid diathesis, it is believed that by the employment of Lycetol in this form its efficiency is greatly enhanced, while this combination will also be found very agreeable and convenient of administration.

And to

Iodothyrine

the active principle of the thyroid gland, superior to all thyroid preparations, being of definite strength and permitting exact and safe dosage.

Iodothyrine is a product of The Farbenfabriken vorm Friedr. Bayer & Co., Elberfeld, and is supplied in form of powder, put up in quarter, half and one ounce vials; also in tablets containing 5 grains each, put up in vials of twenty-five, fifty and one hundred.

Write for Revised Pharmaceutical Price List

Schieffelin & Co., New York

There is no disinfectant and antiseptic as efficient and as safe as

LYSOL

It is not poisonous nor caustic, is easily soluble and cleanly in its application, and therefore recommended by the medical profession for family use, in confinements and for general asepsis, in preference to carbolic acid and other dangerous agents. LYSOL is cheap, being employed in 2 per cent. solution. It pays to keep it in stock.

LEHN & FINK

Sole Agents and Licensees

...New York

Entered at the Post Office at Philadelphia in accordance with Section 159 of the Postal Laws and Regulations.

AMERICAN JOURNAL OF PHARMACY.

PUBLISHED BY AUTHORITY OF THE

PHILADELPHIA COLLEGE OF PHARMACY.

HENRY TRIMBLE, Ph.M., Editor.

Publishing Committee:

HENRY N. RITTENHOUSE, SAMUEL P. SADTLER, WALLACE PROCTER, JOSEPH W. ENGLAND

AND THE EDITOR.

Vol. 68 DECEMBER, 1896. No. 12

CONTENTS.

American Pharmacopœias and Dispensatories. By John Uri Lloyd . . . 637
A Contribution to the Knowledge of Some North American Coniferæ. By Edson S. Bastin and Henry Trimble . . . 642
Edible and Non-Edible Mushrooms and Fungi. By Charles McIlvaine . . . 648
Glycerite of Licorice. By Joseph W. England . . . 663
A Convenient Drying Box. By Thomas S. Wiegand . . . 666
Is Alcohol a Source of Error in Volumetric Analysis? By Lyman F. Kebler . . . 667
The Leaves of Drosera Filiformis, Raf. By George M. Beringer . . . 675
A Simple Method for Obtaining a Low Temperature. By C. Edward Sage, F.C.S. . . . 677
Tablet Medication . . . 678
On Aromadendrin or Aromadendric Acid from the Turbid Group of Eucalyptus Kinos. By Henry G. Smith . . . 679
Editorial . . . 688
Reviews and Bibliographical Notices . . . 689
Minutes of the Pharmaceutical Meeting . . . 691
Notes and News . . . 692
Index to Vol. 68 . . . 693

Price, $3 per Annum, in advance. Issued in Monthly numbers of not less than 48 pages

SINGLE NUMBERS, 25 CENTS.

Address all papers for publication, etc., to the Editor.

All communications relating to subscriptions, advertisements, etc., to the Business Manager, F. YAPLE, 145 North Tenth Street, Philadelphia, Pa.

Edward Stern & Co., Inc., Prs., 112-114 North Twelfth St., Phil'ad'a.

The New UNITED STATES DISPENSATORY

SEVENTEENTH EDITION

This indispensable guide and authority has been carefully and thoroughly revised and rewritten upon the basis of the **NEW PHARMACOPŒIA** by the editors, **Professors Wood, Remington and Sadtler.** All the new remedies have been ably considered, both from the standpoint of the physician and that of the practical pharmacist. Matter really obsolete has been replaced by that which is now necessary, while none of the valuable features which have given such deserved popularity to former editions have been sacrificed. The volume contains **1974 pages,** and is absolutely without a rival as a practical guide and compendium of the oldest as well as the latest researches in the sciences of which it treats.

NOTWITHSTANDING THE GREATLY INCREASED SIZE OF THE NEW BOOK, THE OLD PRICES REMAIN UNCHANGED.

Royal 8vo. Cloth, Extra, $7.00; Best Leather, Raised Bands, $8.00.
With Patent Index, 50 cents additional.

"The most meritorious work on the art and profession of pharmacy in any language. American pharmacy can well be proud of its literature, and that this elevation has been attained is largely due to the compilers of this publication from its inception to the present time, and no history of pharmacy of this country can be written without paying tribute to these names."—*Albert E. Ebert, Ex-President American Pharmaceutical Association.*

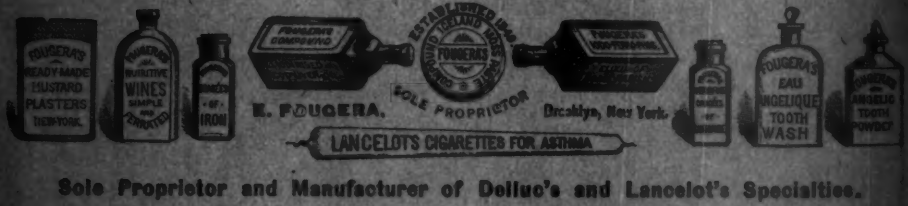
"The United States Dispensatory, as now perfected, stands as an encyclopedia of the medical and pharmaceutical sciences without a counterpart. With it both the physician and pharmacist are equipped with the means of obtaining the latest and most exact information concerning the natural history, properties and uses of all the medicinal agents employed and handled by them."—*American Journal of Pharmacy, Phila.*

For Sale by all Booksellers, or will be sent by the Publishers, free of expense, on receipt of the price.

J. B. LIPPINCOTT COMPANY, 715-717 Market St., Phila.

E. FOUGERA'S MEDICINAL PREPARATIONS.

NO AGENTS



Sole Proprietor and Manufacturer of Delluc's and Lancelot's Specialties.

PRICE-CURRENT MAILED ON DEMAND.

ADDRESS: 209 EIGHTH STREET, - BROOKLYN, NEW YORK

AGENTS FOR THE AMERICAN JOURNAL OF PHARMACY.

Authorized to receive Subscriptions and Advertisements.

C. PARRISH, 72 Henry St., Brooklyn, N. Y.
SAMUEL A. D. SHEPPARD, 1129 Washington St., Boston.
CHAS. T. P. FENNEL, Eighth and Vine Sts., Cincinnati, Ohio.
ALBERT E. EBERT, 426 State St., Chicago, Ill.
WM. T. WENZELL, 113 Fulton St., San Francisco, Cal.
JAMES S. ROBINSON, Second and Madison Sts., Memphis, Tenn.
JOHN C. FALK, 1225 Franklin Ave., St. Louis, Mo.
BURROUGHS, WELLCOME & CO., Snow Hill Buildings, London, Eng.

Our Readers will find it to their advantage to carefully consult the Advertising pages when desiring to correspond with STRICTLY FIRST-CLASS PARTIES.

JOHN WYETH & BROTHER,

SUBGALLATE -OF- BISMUTH.

A VALUABLE AGENT IN

Fermentative Dyspepsia

And in all forms of

Diarrhœa.

Tablets

1, 2, 3 and 5 Grains.

STRONTIUM

BROMIDE. LACTATE. SALICYLATE.

The marked attention given to the Salts of Strontium and the satisfactory results of their therapeutic action induced us several years ago to prepare an Elixir and Liquor of both the Bromide and Lactate, which have proven most acceptable to the medical profession.

For Portability, Convenience, and Ease of Administering

We have been solicited to prepare them in Tablets which we now offer

PIL. STRONTIUM BROMIDE . . 3 and 5 Grs.
PIL. STRONTIUM LACTATE . . 3 and 5 Grs.
PIL. STRONTIUM SALICYLATE 3 and 5 Grs.

SUPPOSITORIES.

Our List numbers over 350 different —covering a broad field from which to select . . . . . .

OUR Glycerine Suppositories

are 95 per cent. Pure Glycerine and put up one in a vial, one dozen vials in a box. The old form, one dozen in bottle, also supplied . . . . .

LITHIA EFFERVESCING TABLETS

CONTAINING

3 and 5 Grains

RESPECTIVELY OF

Citrate of Lithium.

One in a glass of water always making a true . . . . . .

Lithia Water.

BEEF JUICE.

(WYETH)

A Liquid Preparation of the Choicest Beef, containing the Nutritious, Albuminous principles in an unaltered and soluble form.

Physicians

Will find WYETH'S BEEF JUICE of great value as a strengthening diet in cases of convalescence, nervous prostration and similar diseases

Professional Men

Suffering from overwork, mental anxiety, etc., will find that one-half teaspoonful in half a glass of cold water—at intervals during the day and upon retiring—will relieve fatigue, both of mind and body.

WYETH'S (LIQUID) EXTRACT of MALT

Contains the Largest Amount of Extractive Matter of any preparation of its class and the

Minimum Amount of Alcohol.

Not regarded as a Beverage, but a valuable Food Auxiliary.

SPECIFY WYETH'S MANUFACTURE.

LITERATURE ON THE ABOVE WILL BE FURNISHED UPON APPLICATION.

PHILADELPHIA.

GRANULATED OPIUM ASSAYED.

For a number of years we have advocated the use of Granulated Opium for making all liquid preparations in place of the powdered, on account of its being more readily exhausted and giving a better result.

We are the original producers of Opium in this form, and by its use a pharmacist secures a preparation that is invariably U.S.P. strength (about six grains Morphine to each fluid ounce).

Send for our price list, which includes a full line of powders for percolation and a valuable formulary.

Gilpin, Langdon & Co., BALTIMORE, MD.

PANOPEPTON

BREAD AND BEEF PEPTONE

Presents all the constituents of the two great types of food in a perfectly soluble, diffusible and absorbable form.

In sickness, the indications and necessities for a comprehensive nutrient are no less plain than in health. The expedient of predigesting or peptonising this food is one of the most rational, scientific and important advancements of modern medicine.

Panopepton conserves and imparts energy, sustains the system, resists the inroads of disease, and quickly enables the digestive functions to resume their normal power, and thus appropriate ordinary foods.

FAIRCHILD BROS. & FOSTER,
NEW YORK.